STOCKPILE AND ACCESSIBILITY OF STRATEGIC AND CRITICAL MATERIALS TO THE UNITED STATES IN TIME OF WAR

HEARINGS

BEFORE THE

SPECIAL SUBCOMMITTEE ON MINERALS, MATERIALS, AND FUELS ECONOMICS

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

EIGHTY-THIRD CONGRESS

FIRST AND SECOND SESSIONS

PURSUANT TO

S. Res. 143

A RESOLUTION TO INVESTIGATE THE ACCESSIBILITY AND AVAILABILITY OF SUPPLIES OF CRITICAL RAW MATERIALS

PART 10—APPENDIX

Industrial Representatives of Producers and Users of Strategic and Critical Materials

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SEPTEMBER 21, 22, 23, OCTOBER 22, 24, DECEMBER 10, 11, 17, 18, 1953,
JANUARY 5, 6, 25, FEBRUARY 16, 24, MARCH 30,
APRIL 6, 7, AND MAY 24, 28, 1954

Printed for the use of the Committee on Interior and Insular Affairs

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APPENDIX

Appendix 1

Investigation of the Domestic Lead and Zinc Industries Under Section 332 of the Tariff Act of 1930

Petition of the lead and zinc industries for escape clause relief

To the United States Tariff Commission, September 3, 1953.
From the National Lead and Zinc Committee, Otto Herres, chairman.

Public notice was given July 29, 1953, that pursuant to a resolution of the Committee on Finance of the United States Senate, July 27, 1953, and of the Committee on Ways and Means of the House of Representatives, July 29, 1953, the United States Tariff Commission on the 29th day of July 1953 instituted a general investigation under the provisions of section 332 of the Tariff Act of 1930, as amended, of the domestic lead and zinc industries, including the effect of imports of lead and zinc on the livelihood of American workers.

Petition of lead-zinc mining industry for escape-clause relief

The National Lead and Zinc Committee representing every lead and zinc mining district in the United States, notified the Commission on August 12, 1953, that it desired to appear and give testimony at the hearings in connection with this investigation in Washington, D. C., called for November 3–5, 1953. At the same time the committee requested an opportunity to appear and testify during the November hearings in support of the petition which it hereby presents for an investigation under section 7 of the Trade Agreements Extension Act of 1951, as amended by the Trade Agreements Extension Act of 1953, for escape-clause relief.

The National Lead and Zinc Committee in behalf of the lead and zinc mining industries respectfully requests the Tariff Commission to recommend to the President that lead articles including pigments, ores, and concentrates which are dutiable under paragraphs 72, 391, and 392 of the Tariff Act of 1930 and zinc articles including oxides, ores, and concentrates which are dutiable under paragraphs 77, 393, and 394 of this act, be increased by 50 percent over the rates existing on January 1, 1945. Rates of duty on these articles have been reduced by trade agreements with various countries, but specifically by General Agreements on Tariffs and Trade at Geneva, effective January 1, 1948, and Torquay, effective June 6, 1951.

The rates existing on January 1, 1945, within the meaning of the provision in section 350 (a) (2) of the Tariff Act of 1930, as amended, limiting the authority of the President to proclaim increases or decreases in rates of duty, are understood to be the rates to which the 50 percent increase requested on articles dutiable under paragraphs 391, 392, 393, and 394 may apply. These rates and the relief requested are listed in the following tabulation in comparison with present rates:

Paragraph	391	392	393	394
Tariff	Lead ores, etc.	Lead, bullion, etc.	Zinc ore, etc.	Zinc slab, etc.
1945 cents	1½	1¾6	1½	1½0
Add 50 percent do	5/10	1/32	5/10	7/10
Total do	1.8	2.5	1.8	2.1
Now do	0.75	1.0625 [1]	0.6	0.7

[1] 1¾6 cents.

Request for import quotas

The Trade Agreements Extension Act authorizing the President to enter into trade agreements under section 350 of the Tariff Act of 1930, as amended, states:

"Should the Tariff Commission find, as the result of its investigation and hearings, that a product on which a concession has been granted is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported in such increased quantities, either actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive products, it shall recommend to the President the withdrawal or modification of the concession; its suspension in whole or in part, or the establishment of import quotas, to the extent and for the time necessary to prevent or remedy such injury."

The domestic lead and zinc mining industries believe that the maximum benefit obtainable by the limited 50-percent increase on duties over rates existing in 1945 is inadequate to provide relief from the destrictive consequences to lead-zinc mining operations in the United States of concessions granted under trade agreements.

Domestic mining industry demoralized

A flood of imports has demoralized the domestic mining industry. Mines have been forced to discontinue or cut back production in the Tri-State mining district of Missouri, Kansas, and Oklahoma, and in Utah, Idaho, Washington, Colorado, Tennessee, New Mexico, and elsewhere. The industry has experienced serious curtailment and is threatened with further losses through dumping of lead and zinc from low-wage foreign countries on the American market. The mines have suffered from the effects of currency devaluation and the monopolistic and socialistic practices of foreign governments in the purchase and sale of metals.

This critical state of affairs led to the formation of a national committee representing all lead-zinc mining districts in the United States during the emergency for the purpose of seeking relief through such proper means as are available.

Proposal for legislative relief

The committee in conference at Denver, Colo., early this year concluded that constructive legislation was needed and should be requested without delay for the preservation of the lead and zinc mining industry. Congress was asked to consider a legislative program supported by the united domestic industry. This program contemplates a sliding-scale stabilization tax on imports of lead and zinc to be applied only when prices drop below a reasonable level. The proposed tax is an antidumping measure and in effect is a vanishing tariff which no longer applies when the market price reaches a level which will permit the survival of the industry.

Ways and Means Committee of House recommends sliding scale tax

The Committee on Ways and Means of the House of Representatives considered the proposed sliding-scale stabilization tax favorably and recommended its passage as section 11 of H. R. 5894, the Simpson bill to amend the Trade Agreements Extension Act of 1951. The Ways and Means Committee received testimony on Friday, May 15, 1953, in relation to the emergency confronting the lead and zinc mining industries caused by a flood of imports. We respectfully request the Tariff Commission to take official notice of the published testimony before the committee and the report of the commitee on H. R. 5894 recommending passage of the stabilization tax.

The Ways and Means Committee reported:

"The domestic mining industry has experienced serious curtailment due to dumping of lead and zinc by low-wage foreign countries on the American market. * * * Moreover, domestic miners have suffered from the adverse effects of foreign currency devaluation and the monopolistic practices of foreign governments in the purchase and sale of these metals.

* * * * * * *

"Our domestic mine production cannot be stopped or started at will. The last 12 years have seen apparent shortages and emergency demands for maximum metal production alternating with a surplus of metal resulting from dumping of foreign metals in our market. This has resulted in many temporary and some permanent mine closures. Each such cycle has resulted in higher costs, lower profits, loss of both immediate and future potential production and discouraging further investment in mining." (P. 9, Rept. 777, 83d Cong., 1st sess.)

Government officials urge escape-clause application

Government officials testifying before the Ways and Means Committee on May 15, in many instances acknowledged the predicament of the mining industry and urged the mines to seek relief by escape-clause application rather than legislative action. Reference is made to the published testimony for detailed statements. However attention is directed to pertinent excerpts which follow:

Hon. Sinclair Weeks, Secretary of Commerce:

"If these industries feel that the present level of imports of lead, zinc, and petroleum are causing, or threatening to cause, serious injury to them, they have under the terms of the Reciprocal Trade Agreements Act at present on the statute books available to them, prescribed procedures for seeking remedial action.

"* * * it seems to me far more appropriate for them to act pursuant to the existing statute than to request the special treatment proposed in H. R. 4294" (p. 648).

Hon. Harold E. Stassen, Director for Mutual Security:

"Of course, those peril point, escape, and other clauses, are a part of the study that ought to be carried on this year; but in the case of lead and zinc, that could well be raised with the Tariff Commission right now for study" (p. 691).

Hon. Douglas McKay, Secretary of the Interior:

"The domestic lead and zinc mining industry is currently experiencing difficulties. It is reported to me that from August 1952 to March 1953, 30 mines have closed, that production has been curtailed, that the number of workers employed has declined, and that prices have fallen sharply. I am also appreciative of the fact that the unprecedented flow of these metals to our shores has contributed substantially to the plight of the domestic lead and zinc mining industry. I am aware also that the governors and legislatures of many Western States have taken cognizance of this serious problem.

* * * * * * *

"It may become apparent in the near future that the domestic industry by its own efforts will not be able to make a complete readjustment to the present situation without painful consequences. Inasmuch as increased imports, as well as increased domestic production, have been a factor—how significant we do not know—it is appropriate for this matter to be investigated by the Tariff Commission. This is the regular procedure established by law for dealing with situations of this kind, and, where warranted, for taking action that is temporary and can be rescinded when the temporary crisis is passed" (p. 697).

* * * * * * *

"The lead and zinc business is an up-and-down business, as you know, and at the present time, because of the surplus, the price is down below what it should be for profitable operation of the good mines." (P. 702.)

Hon. John Foster Dulles, Secretary of State, also expressed the belief that the problems of the lead and zinc industry could be met under escape-clause action and that was the proper approach for relief (p. 623).

Because of this advice from high Government officials, the lead and zinc industries are making application for escape-clause relief.

A letter from the President placed in the record of the Ways and Means Committee hearings by Representative Ed Edmondson, Second District of Oklahoma, states:

"This preliminary report on zinc-mining conditions in Oklahoma and the Tri-State area contains statements that impress me with the seriousness of this situation.

"A strong domestic-mining industry is vital to national security and to the continued prosperity of our country. I hope that the administration may find a way of relieving the depressed conditions that prevail within many mining districts."

Prompt relief is needed. Delay until the Commission on Foreign Economic Policy completes its studies 9 months or a year from now will weaken a basic industry which is essential to national security and wipe out smaller segments of the industry.

We cannot believe that it is Government policy to liquidate small business in this country.

House Select Committee on Small Business reports emergency confronts lead-zinc mines

The Select Committee on Small Business of the House of Representatives held a series of hearings in and near the mineral-producing centers of the Nation a

few months ago to investigate the current condition of the domestic lead and zinc industry and submitted to the House its report on the Effect of Imports on Domestic Producers of Lead and Zinz on June 30, 1953. We respectfully request the Tariff Commission to take official notice of the published report of the Select Committee on Small Business, House Report 688, 83d Congress, 1st session.

The committee reported that the emergency confronting th lead and zinc mines is too grave to stand further delay. Unemployment and heavy economic losses are troubling many communities and thousands of stockholders are suffering losses on their investments. Small independent companies unable to obtain financial support because of the depressed prices of lead and zinc are being forced out of existence. Some are merely holding on at a loss, awaiting the outcome of this escape-clause action or possible legislative relief.

Emergency Lead Committee petition of May 10, 1950

On May 10, 1950, an Emergency Lead Committee, representing over 90 percent of the lead-mine production of the United States, filed an application for investigation of injury to the domestic-lead-mining industry resulting from trade agreement concessions, and a petition for recommendation that escape-clause relief be granted. The Korean emergency intervened, but now the problems that brought about the application and petition in early 1950 have returned. We, therefore, call attetion again to the petition and respectfully request the Tariff Commission to take official notice of it and consider the information presented in May 1950 by the Emergency Lead Committee during the current investigation and hearings.

Production and consumption of lead and zinc

Production figures for the past 5 years indicate an available mine output of lead in the United States amounting to approximately 400,000 tons a year. Secondary production recoverable from scrap amounts to approximately 415,000 tons. Thus, some 815,000 tons from domestic sources are available for consumption. Reported consumption for 1952, a year of high business activity, was 1,130,000 tons, indicating a need for 315,000 tons of foreign material to supplement our domestic supplies. Imports, however, were 643,643 tons, more than double our needs.

Mine production of zinc in the United States during recent years has been discouraged greatly by the heavy imports of low-priced foreign material entering our markets. But during 1951 and the first half of 1952, when foreign zinc was attracted elsewhere by higher prices, United States mine production was at the rate of approximately 60,000 tons a month. This indicates an available output of 700,000 tons a year if protection is afforded to maintain a healthy domestic-mining industry. An additional 60,000 to 70,000 tons is recoverable from scrap. Reported consumption for 1951, a year of high demand, was 1,067,816 tons, including pigments. For 1952, when losses were suffered by the steel strike, consumption was approximately 954,289 tons. Assuming 1 million tons to constitute normal consumption under conditions now prevailing, some 300,000 tons of imports are sufficient to supplement supplies available from domestic sources. During 1952, 699,252 tons were imported, which, as in the case of lead, was more than twice our needs.

Effect of imports on mine output

Imports of lead and zinc for the first half of 1953 and the increase over 1952 were as follows:

	1953	1952	Increase	
			Tons	Percent
Lead	322,922	265,627	57,295	21
Zinc	383,769	249,818	133,951	53½

Consider the effect of these heavy imports on domestic mine production. Mine output of recoverable lead in June, the latest figures available, was 28,129 tons, the lowest since September 1951, and the third consecutive month of decline.

The June output of recoverable zinc from domestic mines declined to 45,184 tons, the smallest monthly output since January 1950, compared to a production of 62,663 tons in May 1952, before the flood of foreign zinc broke the American market.

Imports of lead for the first 6 months of this year are at the rate of 645,000 tons for the year. Our present scrap supply and curtailed mine production indicates only a need for possibly an additional 360,000 tons to supplement our domestic supplies, but less than 300,000 tons if the mines of the country are given reasonable protection against excessive imports.

In the case of zinc, imports are at the rate of 767,500 tons for the year. Our present greatly depressed mine output indicates a need for an additional 400,000 tons to supplement our domestic supplies, but only 240,000 tons if our mines were allowed to produce at the rate of the first half of 1952.

When double the tonnage of lead and zinc we need are imported and offered at prices below the cost of domestic production, the consequences can be only disaster for an industry essential to national defense and security.

Higher costs

A combination of low prices and high costs makes it impossible to operate domestic lead-zinc mines at a reasonable profit. A comparison of current prices and wages with United States Bureau of Labor Statistics figures of past years show the precarious condition now prevailing:

Year	Average wages per hour	Metal prices		Index of labor costs	
		Lead	Zinc	Wages	Per unit recoverable, lead and zinc
1939	$0.683	$0.047	$0.052	100	100
1949	1.565	.158	.124	229.1	269.9
1953	[1] 1.90	[2] .14	[2] .105	278.1	[3]

[1] June.
[2] September 1953.
[3] Not available, probably 300 plus.

Because of declining labor productivity in terms of recoverable metal, the index of unit labor cost of metal production has increased at a more rapid rate than the labor wages index. It will be noted that the labor production cost per unit of recoverable lead and zinc now is more than three times what it was in 1939. But 1939 was a year of depression for lead and zinc when prices were unprofitable and many mines and smelters were forced to curtail or suspend operations because of heavy imports of low-wage foreign metal following a tariff reduction on zinc. Relatively, therefore, it would seem that with costs three times the 1939 level, prices of lead and zinc at less than 3 times the 1939 prices, or 14.1 cents and 15.6 cents per pound, respectively, would be unprofitable.

Complex ores mined nationwide

Lead-zinc mining is a national industry of consequence. Operations cover a wide territory from New York to California. Lead is produced in substantial tonnages from mines in 16 States and zinc in 19 States. But with very few exceptions production is from ores containing both lead and zinc in complex mixtures with zinc predominating in quantity as mine production figures for the country show.

Because lead and zinc are mined in this country for the most part combined in complex ores under widely varying conditions, it is highly important to consider that price difficulties of either metal directly affect production of the other. It is the combined values of lead and zinc that make possible the mining of complex ores containing both metals. Consequently as a national industry consideration must be given to the cost of mining lead-zinc ores and to whether or not the realization from the combination of prices of lead and zinc recovered from those complex ores is sufficient to support a healthy mining industry.

Increasing imports injure domestic industry

As a result of concessions granted under trade agreements reducing the duties on lead and zinc, imports last year were approximately double the quantities required to supplement our domestic production. The effect was to cause the price of lead to drop during 1952 from 19 cents a pound in March to 13.5 cents by October, and zinc from 19.5 cents a pound in May to 12.5 cents by October.

These increased quantities of lead and zinc imports far beyond our consumption requirements caused severe injury to the domestic mining industry during 1952.

This is clearly shown by the drastic drop in prices and the falling off of mine output. But imports are continuing in greatly increased quantities. During the first half of this year lead imports increased 21 percent and zinc imports 53½ percent, sending the price of lead down to 12 cents a pound in April and zinc to a new low for 3 years of 10.5 cents a pound in September. Lead has recovered to 14 cents, temporarily at least, because of heavy demand from consumers. But the low prices are continuing to cause mine closings and a heavy loss of mine output, particularly in the case of zinc which has fallen off from a monthly average of 60,000 tons of recoverable zinc the first part of 1952 to a low of 45,000 tons in June 1953.

The extent of the drop in the price of zinc from 19½ cents to its present low level of 10½ cents and lead from 19 cents to a low of 12 cents and its present price of 14 cents emphasizes the serious consequences of the dumping of foreign metals upon the domestic industry.

The extent of the injury to the domestic mining industry caused by the dumping of foreign lead and zinc on the American market at low prices may be measured to some extent by the cost of production in this country. The experience of the industry as reported from every lead-zinc mining district in the United States is that an average combined price of 31 cents for a pound each of lead and zinc is required to maintain a healthy domestic mining industry. This return would not support marginal mines, but would yield a reasonable profit to well-managed properties.

Imports offered at low prices

By comparison, the Wall Street Journal on Monday, August 31, 1953, in an article by its metal-market reporter, Thomas J. Feller, stated:

"Zinc imports for June were at a record peacetime level, totaling 83,759 tons net, compared with 66,671 tons in May.

"Reflecting these heavy imports, consumers placed few orders. Foreign zinc was reported offered to United States buyers at a price of around 10 cents a pound at New York, including the import duty of 0.7 cents a pound. This compares with the United States price of 11¼ cents, New York, quoted by one custom firm, and 11½ cents quoted by another.

"Demand for lead from domestic sources last week was in good volume at 14 cents a pound, New York. Some foreign lead was offered to United States consumers last week at a price of 13¼ cents a pound, New York area delivery."

Government price considerations

Some measure of what is considered a reasonable price for lead and zinc may be gained from the actions of Government agencies. The Office of Price Stabilization fixed OPS ceiling prices at 19 and 19½ cents per pound for lead and zinc, respectively. There has been no reduction in the cost of mining lead and zinc since the controls were dropped. In fact costs have increased considerably since the time when the Government ceiling prices were set at 19 cents for lead and 19½ cents for zinc.

Of all the industrial metals in common use—iron, copper, lead, zinc, and aluminum—only lead and zinc are below their ceiling prices at this time. The extent of the drop in the price of zinc from 19½ cents to its present level of 10½ cents and lead from 19 cents to a low of 12 cents in April is an indication of the serious injury suffered by the domestic mining industry from dumping of the foreign metals upon the American market.

Contracts were entered into by the Defense Materials Procurement Agency for the expansion and maintenance of supply of zinc under the Defense Production Act during 1952 for deliveries commencing during 1952 and 1953, and covering periods of 2 to 3 years or more. Prices considered reasonable by DMPA as inciated by these contracts range from 15.5 cents to 17.5 cents per pound of zinc.

Tariffs on lead and zinc were suspended in 1952 during the period of scare buying and shortages brought on by the Korean emergency. Congress provided that the tariffs should be reimposed whenever the price of lead and zinc dropped below 18 cents a pound for a calendar month.

Production costs

The total cost of production for lead and zinc is approximately the price of the metal, because, in order to accomplish the greatest financial return and at the same time extend the life of an ore body and its dependent operation, the producer cannot take only the richest ore, but must mine the leanest ore

and employ the most effective metallurgical process that will yield a reasonable profit; that means costs tend to approach the price.

Consequently, when dumping of foreign materials drops the competitive price below the cost of domestic production mine output falls off, as in the case of zinc from 60,000 tons a month to 45,000 tons in a year's time. Small independent companies unable to obtain financial support because of the depressed prices of foreign zinc and lead in the American market are being forced out of existence. Some of the better mines are passing into the hands of large corporations that are able to hold on at a loss until foreign imports virtually have eliminated competition by pricing much of the domestic industry into bankruptcy.

Large corporations can move to foreign fields and receive United States Government assistance in their efforts to produce profitably when metal prices drop too low to permit profitable operation under our wages and living standards. But where does that leave workers and their families and the smaller independent companies and their stockholders unless the Tariff Commission recommends constructive action to the President to correct the situation?

Low-wage competition

The latest available figures compiled by the United States Department of Labor show that the average earnings of American lead and zinc miners are approximately $1.90 an hour, or about $350 a month, only slightly higher than the average $1.87 per hour received by factory workers engaged in the manufacture of durable goods.

In contrast to these earnings, wage rates in some of the South American, Asiatic, and African countries producing lead and zinc ores are as low as 15 to 20 cents an hour. Our wages are 2 to 3 times British wages. Only Canadian and Austra'ian wage scales and living standards approach ours but even in those countries wages are considerably lower. Currency devaluation in the sterling group of countries, Mexico, Belgium, and Peru, to mention a few important examples, provides a competitive advantage to the foreign producer in terms of ores and metals sold for American dollars because wages are paid in depreciated money to the workers in foreign mines.

Official and trade information compiled by the Office of International Trade, United States Department of Commerce, and published in the April 1950 report of Metals and Minerals stated:

"While the recent low prices of lead and zinc in the United States tend to discourage United States producers, they should not critically affect the Australian producers. * * * moreover, devaluation will enable Australian lead to compete on even more favorable terms in world markets than in the recent past."

Decline in employment

The estimated total number of employees at lead and zinc mines in the United States in the early months of 1952, before the price break caused by the flood of imports, was approximately 22,000 according to data compiled by the United States Bureau of Labor Statistics. In the comparable months of 1953 the number was 19,000; by May 1953, employment had dropped to 17,300 and further losses are taking place. The number of production workers dropped from 19,000 in May 1952 to 14,700 in May 1953, the latest Bureau figures available, a loss of 22½ percent in 1 year.

Throughout the 19 States from New Jersey and New York in the East to Washington and Idaho on the West, where lead-zinc mining is an industry of importance, hundreds of communities and thousands of citizens depend on the payrolls of the mines. Lead and zinc mining for the most part is carried on in somewhat isolated areas where it is the only industry of consequence to support entire communities. Closing of the mines makes ghost towns of these communities and causes workers to lose their homes. Including the railroads and service industries dependent on work of the mines, and payrolls going to miners and their families, the loss in employment caused by excessive imports is many times that of the miners directly affected.

Imports and the closing of mines

According to the United States Bureau of Mines preliminary report on the zinc industry in 1952:

"Imports of zinc in ores and concentrates and imports of slab zinc were 49 and 30 percent greater than in 1951, respectively, establishing a record for total zinc in imports that was exceeded only in 1943. (Chief sources of imports were

Mexico, Canada, Peru, Spain, and Bolivia.) Consumption of slab zinc declined from 933,971 tons to 849,289 tons.

* * * * * * *

"Mine production of recoverable zinc decreased 3 percent in 1952 to 661,023 tons. The decline in production was almost wholly attributed to the drop in price. * * * Several mines were closed in the tristate district as was the San Xavier mine, Arizona; the Hilarity and Livingston mines, Idaho; the Mike Horse mine, Montana; the Ely Valley and Copper Canyon mines, Nevada; the Oswaldo and Hanover mines, New Mexico; the Park Utah Consolidated and Silver King Coalition mines, Utah; and the Bonanza mine, Washington."

With respect to lead, the Bureau reported:

"Imports of lead were at an all-time high in 1952; the total was 627,780 tons, or about 2½ times greater than the quantity imported in 1951 and 20 percent above the previous record established in 1950. Mexico supplied 39 percent of the pigs and bars, Canada 20 percent, Australia 16 percent, Yugoslavia 11 percent, and Peru 8 percent. Of the ore and matte imported, 27 percent came from Peru, 22 percent from the Union of South Africa, 18 percent from Bolivia, 11 percent from Canada, and 8 percent from Australia."

During the first 5 months of 1953 the Bureau of Mines reports lead and zinc mines closed as follows:

"*January*

"The St. Anthony Mining & Development Co. property at Tiger, Ariz.

"New Penn Mines, Inc., California: Ore exhaustion and low metal prices.

"*February*

"Ground Hog mine of A. S. & R. Co., largest producer of lead and zinc in New Mexico.

"Two of the largest zinc and lead producers in Idaho, the Bunker Hill & Sullivan Mining & Concentrating Co. and Day Mines, Inc., cut production of low-grade ore, owing to further declines in lead and zinc prices.

"*March*

"The Shenandoah-Dives Mining Co., a substantial producer of lead and zinc in Colorado since 1928, shut down for an indefinite period on March 14, owing to low metal prices. Unfavorable prices have necessitated curtailment and selective mining at many other properties in the Western States.

"Two additional mine mills in the tristate district closed during March, bringing the number of idle mills in the district to 13 out of a total of 23.

"*April*

"New Mexico's output in April was 74 percent below the State average monthly rate in 1952; only one major producer is operating at present.

"*May*

"The Mifflin Mining Co., a small producer in Wisconsin, planned no production in June. Another Wisconsin producer, the Homstead Mining Co., was shut down May 31. The Eagle-Picher Co., the chief producer in the tristate district, closed several of its producing mines during the month.

"The Resurrection Mining Co., one of the principal producers of zinc and lead in Colorado since 1942, announced late in May that about July 3 it would shut down the Resurrection group of mines and mill in Lake County."

Importance of the lead- and zinc-mining industries

The lead- and zinc-mining industries of the United States, under adequate tariff protection from the early years of the Republic until about the beginning of World War II, grew to become the largest in the world.

Because the United States Tariff Commission in May 1953 published a summary of information on rates of duty, prices, production, trade, and supply under the title "Statistics on Unmanufactured Lead and Zinc," and in July 1949 published the report Unmanufactured Copper, Lead, and Zinc: Summaries of Tariff Information With Additional Data, there seems no need to repeat this information here. It would appear that the Commission is supplied adequately with all manner of statistical information concerning domestic and world production, prices, and trade for past years.

Attention rather is directed to the importance of insuring the continuance of sound and healthy lead- and zinc-mining industries in the United States in com-

petition with low-price or subsidized foreign imports. The President stated the case clearly in his letter to Congressman Edmondson on May 11, 1953:

"A strong domestic mining industry is vital to national security and to the continued prosperity of our country."

The United States Bureau of Mines warned of the consequences to the security and economy of the United States of tariff reductions on lead and zinc as long ago as 1938, when cuts in the duties were proposed. The Director, Dr. John W. Finch, in April 1938 stated:

"I should like to suggest that a reduction in the present tariff on lead and zinc can hardly be considered in the public interest if viewed from the standpoint of national defense."

In the Minerals Yearbook, 1939, the Bureau of Mines stated that if the zinc industry is to compete with the low level of foreign prices and continue to supply national requirements it must become adjusted to the lower price level. The statement went on to say:

"To do this, costs of production will have to be reduced, chiefly by lowering wages and by selective mining of the higher grade portions of ore deposits, neither of which is desirable. Reduction of wages is contrary to present Government policies of increasing purchasing power, and the robbing of ore bodies is decidedly anticonservational and detrimental to the long-time welfare of the industry.

"The alternative would be a loss of part of the domestic zinc market to foreign producers. From the standpoint of public interest this likewise would be undesirable because it would aggravate the unemployment problem."

Thus it will be seen that when international tensions lessen to the extent that competitive world trade is restored, we are back again to the conditions described in 1938. Wars, inflation, and additional tariff reductions have served only to make the problems of the domestic mining industry more difficult.

Conclusion

1. The lead-zinc mining industry has suffered serious injury from record high imports as a result of concessions in duty under trade agreements, particularly the General Agreements on Tariffs and Trade at Geneva effective January 1, 1948, and Torquay, effective June 6, 1951.

The effect of the reduced duties on the domestic industry was obscured by shortages and scare-buying during the Korean emergency and the recurring crises of the war and postwar years. Now with the lessening of international tensions and the return of competitive conditions in world trade the serious consequences of the concessions have become apparent.

Imports of lead and zinc continue to enter the United States in greatly increasing quantities far in excess of possible market requirements. Imports of lead increased during the first 6 months of 1953 by 21 percent over the same period last year. Zinc imports for the 6 months increased 53½ percent over 1952.

Approximately 315,000 tons of lead imports are needed to supplement our domestic supplies. During 1952, 643,000 tons were imported to flood our markets.

The available mine output of recoverable zinc is approximately 700,000 tons. An additional 300,000 tons is ample to supplement domestic production. During 1952 approximately 700,000 tons were imported to close our mines and throw American miners out of work.

2. The effect of the excessive imports on prices has been a price break since OPS controls were lifted of 46 percent in zinc from 19½ cents a pound to 10.5 cents a pound by September 1953, and 26 percent in lead from 19 cents a pound to a low of 12 cents a pound. The price of lead has recovered to 14 cents, temporarily at least, but no indication can be seen of a recovery in the price of zinc unless it comes about through shortages created by the liquidation of more of our mines. Foreign lead and zinc, it is reported, are being offered currently to United States buyers at less than United States quoted prices.

3. Lead-zinc mining is a national industry carried on in 19 States over a wide territory reaching from New York, New Jersey, and Virginia westward to Washington, Idaho, and California. Because lead and zinc are combined in complex ores price difficulties of either metal affect production of the other.

Because of excessive imports, domestic mine output of recoverable zinc has dropped from a monthly average of 60,000 tons during the first part of 1952 to a low of 45,000 tons in June 1953. Mine output of recoverable lead dropped to 28,129 tons in June, the lowest in several years and off some 18 percent over the first part of 1952.

4. Approximately 4,000 miners have been thrown out of work by the closing of mines and curtailment of production caused by the sale of imported material at less than the cost of domestic production and further losses are taking place. Including service industries and transportation the loss of employment is many times the number of miners directly affected. Many communities have become ghost towns and a great many families have lost their homes.

5. Wages have increased from 68.3 cents in 1939 to $1.90, and the labor cost per unit of recoverable lead and zinc mined is now three times what it was then, but tariff protection has virtually disappeared. The year 1939 was not a profitable year for lead-zinc mining. Relatively, therefore, prices less than three times the 1939 prices, or 14.1 cents and 15.6 cents per pound for lead and zinc, respectively, would be unprofitable.

Industry experience indicates a need for not less than a combined price of 31 cents for a pound each of lead and zinc to support a sound domestic industry. The Defense Materials Procurement Agency recognized a price of 15½ to 17½ cents a pound for zinc as being reasonable for the expansion and maintenance of supply in defense contracts.

6. In contrast to average earnings of American lead and zinc miners of $1.90 an hour, wage rates at foreign mines are far lower. Currency devaluation in Mexico, Peru, Belgium, the sterling group of countries and elsewhere provides the foreign producer with an immense competitive advantage in selling ores and metals for American dollars, to say nothing of virtually nullifying what little tariff protection remains after the Geneva and Torquay concessions.

7. The President has stated that a strong domestic mining industry is vital to national security and the continued prosperity of our country. High Government officials have recognized the deplorable plight of the domestic lead and zinc industry and suggested that the industry seek escape-clause relief. The governors and legislatures of many States have taken cognizance of this serious problem. The Ways and Means Committee of the House of Representatives recommended the enactment of a sliding scale stabilization tax on imports of lead and zinc.

The lead and zinc mining industries in the United States grew to be the largest in the world under adequate tariff protection before the beginning of World War II. Excessive imports made possible by tariff concessions are causing serious injury to the industries and threaten to destroy much of their productive capacity unless adequate protection is soon restored.

8. The President's Materials Policy Commission in its report of June 1952, commonly known as the Paley report, estimated the changes likely to take place in the production and consumption of lead and zinc in the United States and other parts of the free world from 1950 to 1975. The report indicated an increased consumption by 1975 of the 2 metals in the United States of 50 percent over 1950. But to meet all estimated requirements production from other parts of the free world must be increased by 2,373,000 tons a year if United States mine output is permitted merely to hold its own. United States consumption accounts for a little over half of the total available supply.

A statement by Paul H. Hunt, a mining engineer of wide experience in the operation of lead-zinc mines, is attached to this application. It points out the perilous position of the economy of the United States in future years unless the domestic lead and zinc mining industries are given the adequate tariff protection needed to prevent the closing and abandonment of their properties.

9. In view of the information presented and unforeseen conditions which have developed since the duty concessions were granted, including inflation, devaluation of foreign currencies, the monopolistic and socialistic practices of foreign governments in the purchase and sale of metals and the need for a strong mining industry to assure national security and provide defense against aggression, an upward revision of the tariffs on articles of lead and zinc to the maximum extent permissible is urgently and immediately needed.

It is the belief of the lead and zinc industries that a sliding scale stabilization tax on imports of lead and zinc as recommended to Congress by the Ways and Means Committee offers a solution more in the public interest than the establishment of quotas. It is proposed to present this antidumping plan for a vanishing tariff to the Tariff Commission for consideration in making its report to the Senate Finance Committee and the Ways and Means Committee of the House of Representatives at the time of the November 3 and 5 hearings.

The sliding scale stabilization tax plan recognizes the need for some imports to supplement domestic production. For this reason no taxes apply when the domestic market price equals or exceeds an adjusted base price of 15½ cents per

pound. That means there will be no restriction of opportunity for foreign lead and zinc to find a market in this country to the extent that domestic mines cannot take care of the demand. And for the consumer, it means protection against shortages and high foreign prices in times of emergency as well as relief from the market instability difficulties of recent years.

The present deplorable condition of the domestic lead and zinc mining industries, however, compels us to ask for the establishment of quotas until some alternative form of protection adequate for relief from the serious injury suffered from excessive imports is available.

Additional evidence and testimony in support of this application for escape-clause relief will be presented at the November hearings.

Respectfully submitted.

NATIONAL LEAD AND ZINC COMMITTEE,
OTTO HERRES, *Chairman.*

EXCERPTS FROM THE PRESIDENT'S MATERIALS POLICY COMMISSION REPORT

I. United States production, imports, scrap recovery, and consumption of lead and zinc for 1950 and estimates for 1975

[In thousands of short tons]

	1950 [1]					1975 [2]				
	Production	Scrap	Imports	Consumption	Self-sufficiency	Production	Scrap	Imports	Consumption	Self-sufficiency
					Percent					*Percent*
Lead	430	428	565	1,212	70	300	750	900	1,950	53
Zinc	618	75	382 (a)	1,156	60	700	100	800	1,600	50
Total	1,048	503	947	2,368	.....	1,000	850	1,700	3,550	.....

[1] In 1950 imported 250,000 tons zinc from stocks.
[2] Average change for 2 combined metals to 1975: United States primary production, −5 percent; United States total consumption, + 50 percent.

II. Free world production, exports to the United States and consumption for 1950 and estimates for 1975

	1950					1975				
	Production	Scrap	Exports	Consumption	Exports—production	Production	Scrap	Exports	Consumption	Exports—production
					Percent					*Percent*
Lead	1,214	.....	565	840	46	2,400	.....	900	1,500	37.5
Zinc	1,313	.....	382	1,061	29	2,500	.....	800	1,700	32.0
Total	2,527	.....	947	1,901	.....	4,900	.....	1,700	3,200	.....

III. United States production and consumption compared

	Production plus scrap				Consumption			
	1950	1975	Change	Change	1950	1975	Change	Change
			Tons	*Percent*			*Tons*	*Percent*
Lead	858	1,050	+192	+22	1,212	1,950	+738	+61
Zinc	693	800	+107	+15	1,156	1,600	+444	+38
Total	1,551	1,850	+299	.....	2,368	3,550	+1,182	.....

IV. Free world production and consumption compared

	Production				Consumption			
	1950	1975	Change	Change	1950	1975	Change	Change
			Tons	*Percent*			*Tons*	*Percent*
Lead	1,214	2,400	+1,186	+99	840	1,500	+660	+79
Zinc	1,313	2,500	+1,187	+90	1,061	1,700	+639	+60
Total	2,527	4,900	+2,373		1,901	3,200	+1,299	

SUMMATION OF ESSENTIAL DATA FROM PREVIOUS TABULATION

[In thousands of short tons of lead plus zinc]

Consumption of metals

Year	For the United States		For the Free World		Total tons
	Tons	Percent of total	Tons	Percent of total	
1950	2,368	55.4	1,901	44.6	4,269
1975	3,550	52.5	3,200	47.5	6,750

Combined increased consumption in 25 years, 2,481,000 tons, or 58.1 percent.

Primary production of metals

Year	For the United States		For the Free World		Total tons
	Tons	Percent of total	Tons	Percent of total	
1950	1,048	29.3	2,537	70.7	3,585
1975	1,000	17.0	4,900	83.0	5,900

Combined increased production in 25 years, 2,315,000 tons, or 64.5 percent.

This brief was prepared for the purposes of pointing out the perilous position in which the economy of the United States will find itself if within the very near future because of the inconsequential tariffs now in effect any considerable portion of our domestic lead and zinc mining industry will be forced to shut down and abandon their properties.

Nature of lead-zinc mining

The ores of lead and zinc occur closely associated, in general in varying percentages to each other in different mines and districts but in the United States the average is about 37 percent of lead to 63 percent of zinc. For the purposes of this brief the two metals are therefore combined as lead plus zinc. The nature of these lead-zinc ore bodies is such that they must be mined by underground operations, usually requiring pumping and heavy timbering to support the workings and stopes. In such operation the costs of labor represent from 60 to 65 percent of total costs and maintenance and pumping must be kept up, otherwise caves will occur and the costs of reopening would be prohibitive.

In brief, lead-zinc mining is of such a nature that any shutdowns for only 2 or 3 years usually mean a death sentence for the property with a complete loss of all the previous expenditures and the caving of developed ore bodies.

Report of the President's Materials Policy Commission

This Commission was appointed by Executive order of the President on January 22, 1951, and the report was issued in June of 1952. In his letter to the Commission, the President expressed the hope and purpose of this study of the future needs of the United States for materials that "By wise planning and determined action we can meet our essential needs for military security, civilian welfare, and the continued economic growth of the United States."

The data on page 1 of this brief are taken from the Commission's report. These data were compiled by able and conscientious engineers and statisticians and, while undoubtedly are subject to some errors, we believe approximate the future course of events as closely as it was possible to determine.

SUMMATION OF THE ESSENTIALS OF THE ESTIMATED CHANGES LIKELY TO TAKE PLACE IN THE PRODUCTION AND CONSUMPTION OF LEAD PLUS ZINC IN THE UNITED STATES AND THE FREE WORLD FROM 1950 TO 1975

1. United States primary production of lead plus zinc will about hold its own, showing an estimated decrease of only 48,000 tons annually, or 5 percent of the primary production in 1950.

2. United States consumption of these 2 metals will increase by 1,182,000 tons, or 50 percent more than the 1950 consumption. The United States consumption in 1950 was 55.4 percent of the total available supply (United States plus free world supply). In 1975 it is estimated the United States consumption will be but slightly less, or 52.5 percent of the total available supply.

3. The free world's production of these metals must be increased by 2,373,000 tons annually between 1950 and 1975, or nearly double (increase 93.7 percent) in order to satisfy their own and the needs of the United States.

4. The free world's consumption is estimated to increase by 1,299,000 tons in this 25-year period, or by 68.3 percent of their 1950 consumption.

COMMENTS ON THE ABOVE DATA

Paragraph 1, above: In order to maintain approximately the same primary production of lead plus zinc in 1975 as in 1950, the American producer must be assured of some stability of prices at a level that will enable him to pay his costs of extraction, that will warrant a conservative management to spend a portion of its working capital in additional exploration and development of contiguous territory to maintain a reserve of ore for at least 2 or 3 years of operation and in addition some small return to the owners or stockholders of the company.

The alternative to this requirement of stability of prices permitting some small returns above costs of operation, simply means the rapid and complete liquidation of the lead-zinc mining industry of the United States together with the investments in reduction plants, railroads, powerplants and lines supplying the mines and the abandonment of towns and communities that have grown up and are dependents upon this industry. To at least indicate some idea of the economic loss of such a catastrophe as the liquidation of the lead-zinc mining industry of this country, it has been determined that for each worker directly employed in a basic industry such as mining, there are 10 or more people, including their dependents, wholly dependent for their livelihood upon this industry. It might be added that there are some 90,000 engaged in the mining or reduction of lead-zinc ores in the United States.

This threatened liquidation of the lead-zinc industry of the United States, unless some relief is recommended by your honorable Commission and approved by the President, will take place far sooner than is generally anticipated. The nature of underground mining is such that decaying timber and continuous flows of water to be pumped and the costs of such maintenance soon make it obvious to management rather than be bled white it is better to accept losses and recover what it can salvage. And such an industry, once closed down, can never be called back to production, even in a national emergency such as we have experienced in the past and will undoubtedly experience again.

There is still another danger, perhaps the most sinister of all affecting the welfare of this country. In its report to the President, the Materials Policy Commission frequently refer to the advantages to be gained by supplying our needs for raw materials by purchase in these undeveloped countries where wages and living standards are low and they can be bought "at the lowest possible cost." This may be a true statement, if there is a healthy competition afforded by a growing and vigorous domestic industry, but without such competition, it has been our invariable experience that when the United States has been in dire distress for the lack of some essential raw material (potash, crude rubber, camphor, quinine, diamonds, etc.) we have not been able to buy it at "the lowest possible cost," but by the devices of export tariffs, restrictions of production, manipulations of cartels, taxes, exchange regulations, etc., we have been forced to pay the highest possible prices.

Comment on paragraph 2: These data show the tremendous importance of lead-zinc in the economy of the United States. It is the belief of the statisticians and economists compiling these data the need for these metals will continue to increase faster than the population. That the 7½ percent of the population of the world, represented by the people of this country, should require and continue to require, more than half of the entire available supply of lead and zinc emphasizes the importance of these metals to us, but at the same time it raises doubts of the soundness of a policy that would cause the destruction of our own domestic sources of supply in the hopes that thereby we can temporarily buy these metals for 2 or 3 cents less than they can be produced in this country, even though in so doing we become wholly dependent upon foreign countries.

Comment on paragraph 3: It is a fair inference the compilers of these data first estimated the probable production of the United States and the probable consumption of both this country and the free world in 1975, then deducted the production from the consumption and called this the probable production of the free world in 1975. There is nothing improper in this, but in no other way could production and consumption so nicely balance. These figures of an increase of free world production nearly double that of 1950, or an annual increase by 1975 of 2,373,000 tons of lead plus zinc, must have been disturbing to the Commission in preparing their report for certainly there is not that much ore in sight and to make this production possible will require the expenditures of enormous sums of money in foreign mine exploration. The Commission, however, in the text of their report faced up to the problem and frankly stated there is not the money in foreign countries to finance such a tremendous program and that the greater part of such money must come either from American investors or from the United States Government.

The only comment to offer on this paragraph is to ask this question: Is it wise to permit our own domestic lead-zinc industry to go into liquidation and suffer the great losses this will entail as well as become practically wholly dependent upon foreign sources of supply for these essential metals and then, in consequence, be forced to raise much greater sum of capital to be invested in foreign fields where we shall be able to exercise very little, if any, control?

Comment of paragraph 4: While it is heartening to note an increased free world consumption estimated for these metals which are so essential to growth and improvement of living standards, nevertheless a large part of the foreign investment we shall be called upon to make will be for the benefit of foreign consumers. Perhaps this has become a habit and we shall cheerfully assume such added burdens, but if in the next short while, we permit the destruction of our domestic lead-zinc industry, the costs of developing a foreign source of supply to replace it will be increased mathematically by more than 43 percent and actually by a much greater percentage.

Respectfully submitted.

PAUL H. HUNT.

APPENDIX 2

INVESTIGATION OF THE DOMESTIC LEAD AND ZINC INDUSTRIES UNDER SECTION 332 OF THE TARIFF ACT OF 1930 AND INVESTIGATION OF INJURY TO THE DOMESTIC LEAD AND ZINC INDUSTRIES UNDER SECTION 7, TRADE AGREEMENTS EXTENSION ACT OF 1951, AS AMENDED

NOVEMBER 14, 1953.

Brief of Otto Herres, chairman,[1] National Lead and Zinc Committee, for the Lead-Zinc Mining Industry of the United States to the United States Tariff Commission

Mines suffering serious injury

Virtually the entire lead-zinc mining industry of the United States with the exception of companies engaged in foreign mining activities presented positive and indisputable evidence to the Commission in the hearing held in Washington, D. C., November 3-6, 1953, to show conclusively that the mines of this country have been seriously injured and domestic smelters have been forced to curtail their production, because foreign lead and zinc are flooding our markets at less than the cost of domestic production. That the mines were suffer-

[1] Vice president, Combined Metals Reduction Co.

ing serious injury was unquestioned. The facts are clear and were freely acknowledged by all appearing before the Commission. The question for the Commission to decide became not whether the mines were injured but rather what steps should be taken to preserve an industry important to national defense and essential to the civilian economy. Only partial relief is afforded by the limited increase in duties which is possible under the existing law.

John Marshall, president of Zinc Local 401, Chemical Workers Union, CIO, Bartlesville, Okla., in his testimony stated pertinently: "Today we are faced with curtailment at a time when the consumption of zinc and zinc products is at the highest peacetime level ever known in these United States. * * * This is a serious situation with our people."

Production curtailed by excessive imports

The trouble that is causing substantial mines to close and smelters to curtail and lay off workers is not shortages of ore. Work of opening new mines and developing large ore reserves is being suspended because production has become unprofitable. Well-qualified witnesses testified that the difficulty is caused by excessive imports of lead and zinc at low prices made possible by concessions granted under the general argument on tariffs and trade.

The National Lead and Zinc Committee speaking for the lead and zinc mining districts of the United States gave testimony to the Commission in support of its petition under section 7 of the Trade Agreements Extension Act of 1951, as amended, for "escape clause" relief. At the same time the committee presented testimony to be considered by the Commission in its investigation of the lead and zinc industries requested by the Committee on Finance of the Senate and the Committee on Ways and Means of the House of Representatives.

Adequate relief requested

Workers and management, mining associations and labor unions, representatives of both mines and smelters from all parts of the country without exception joined with the national committee in requesting the Commission to recommend to the President the withdrawal or suspension of duty concessions on the foreign lead and zinc which is causing heavy losses to the mines of this country and bringing unemployment to many communities. But the maximum benefit obtainable by the limited 50 percent increase on duties over rates "existing in 1945," according to the testimony presented, is inadequate to provide relief from the destructive consequences of the excessive imports to the lead-zinc mines. The Commission, therefore, was urged to recommend further protection by such proper means as are available under existing law, or to report to the committees of Congress the need for legislative action in case sufficient relief cannot be provided otherwise.

Injury unquestioned

No testimony whatever was presented to the Commission that denied the serious injury sustained by the lead-zinc industry and its workers. All who testified recognized the need for relief to the mines but differed in their suggested remedies.

A flood of imports has demoralized the domestic mining industry. Evidence was presented and statements were filed from lead-zinc mining districts in Arizona, Colorado, Nevada, New Mexico, Idaho, Washington, Utah, Wisconsin-Iowa-Illinois, the Tri-State region of Kansas, Oklahoma and Missouri, Tennessee and New Jersey showing that mines have been forced to discontinue or curtail production and lay off workers because imports of lead and zinc are being sold on the markets of the United States at less than the cost of domestic production. In fact, representatives of Canadian and Mexican producers opposing tariff relief by "escape clause action" admitted that the imports are being sold in the United States at less than the cost of production of the Canadian and Mexican lead-zinc mines.

Price below foreign cost of production

Mr. Jean Vuillequez, vice president and director of sales of the American Metal Co., Ltd., testified that his company operates no metal mines in the United States but represented concerns producing in Canada, Mexico, and South Africa and is the principal importer into this country of foreign lead.

He was asked by Commissioner Talbot:

"In other words, a foreign producer at the current market cannot bring lead into this country at a profit?

"Mr. VUILLEQUEZ. Here again I must say that our mines in Mexico are lead-zinc and it is the total value per ton of ore that counts. At the present price of lead 13½ cents and 10 cents for zinc we are losing money in Mexico.

"Commissioner TALBOT. * * * Neither the foreign mines or the domestic mines can produce lead at a profit at the current price?

"Mr. VUILLEQUEZ. I wish you would add zinc to that, sir. * * *. I wish to make the statement that at the current prices for lead and zinc the mines that our company controls in Mexico are losing money."

Testimony was presented by representatives of the domestic industry to the effect that foreign producers exporting to the United States gained considerable advantage over the mines of this country in competitive trade by devaluation of foreign currencies and because of their much lower wage scales.

Mr. Vuillequez confirmed the devaluation in the case of Mexico and stated that in 1948 the Mexican currency had a value of 4.85 Mexican pesos to the dollar. Today it is 8.65 pesos to the dollar.

Undisputed testimony showed that with the exception of Canada where wages and living standards are much the same as in the United States, foreign miners in many instances receive no more for a day's work than miners in the United States receive for 1 hour.

Canadian situation

Mr. V. C. Wansbrough, managing director, Canadian Metal Mining Association, testified that Canada has a closely parallel situation to the United States because of the decline in lead and zinc prices. He stated that 15 lead-zinc producers in Canada have been forced to close operations in the past year. Some of the large and long-established producers have postponed expansion projects.

Testimony from Mr. Wansbrough and his consultant, Mr. G. C. Bateman, was to the effect that 55 lead-zinc producers were operating mines in Canada a year ago and 15 of them have been forced to close by low metal prices.

Their testimony showed that one Canadian Company, the Consolidated Mining & Smelting Co., affiliated with the Canadian Pacific Railroad Co., operating the largest lead-zinc mine in the world, produces all of the refined lead and more than 70 percent of the refined zinc in Canada. The next most important is Hudson Bay Co. which produces the remaining refined zinc.

War causes market changes

Mr. Wansbrough stated that prior to World War II, Canadian markets for lead and zinc were in Europe and the Orient but with the outbreak of war these markets were lost to Canada. The United States which previously had been self-sufficient in the two metals developed a deficit that was made up in considerable part by Canada and Mexico.

It will be recalled, however, that the shift in trade channels came about from the submarine menace and the occupation and devastation of much of Europe. At the same time the United States became the great arsenal of democracy and has continued since to give support as well as assistance in rearmament for defense against aggression to much of the free world. In case international tensions lessen and other nations become less dependent on our assistance, possibly our need to import foreign lead and zinc to supplement domestic supplies will not be so great.

Tariffs and subsidies

It was stated that the closing of lead-zinc mines in Canada on economic grounds was not in any degree attributable to tariff concessions granted by the Canadian Government. Obviously Canadian lead-zinc mines exporting the major portion of their production are not concerned over tariff reductions on lead and zinc by Canada. The situation in that respect is not parallel to this country. Mines in the United States perhaps are better qualified to testify concerning the effect of tariff reductions granted by the United States Government.

Mr. Wansbrough testified that the Government of Canada was forced to subsidize the gold mining industry because communities existing solely because of the mining activity in many cases would have gone out of existence unless something had been done to maintain the mines. Evidently Canada is solicitous of the mining communities. No evidence was given to indicate that the two large companies producing all of the refined lead and zinc in Canada were in need of governmental assistance.

Production and consumption of lead and zinc

Production figures for the past 5 years indicate an available mine output of lead in the United States amounting to approximately 400,000 tons a year. Secondary production recoverable from scrap amounts to approximately 415,000 tons. Thus some 815,000 tons from domestic sources are available for consumption. Reported consumption for 1952, a year of high business activity, was 1,130,000 tons, indicating a need for 315,000 tons of foreign material to supplement our domestic supplies. Imports, however, were 643,643 tons, more than double our needs.

Evidence was offered showing that mine production of zinc in the United States during recent years has been discouraged greatly by the heavy imports of low-priced foreign material entering our markets. But during 1951 and the first half of 1952 when foreign zinc was attracted elsewhere by higher prices, United States mine production was at the rate of approximately 60,000 tons a month. This indicates an available output in excess of 700,000 tons a year if protection is afforded to maintain a healthy domestic mining industry. An additional 60,000 to 70,000 tons is recoverable from scrap. Reported consumption for 1951, a year of high demand, was 1,067,816 tons including pigments. For 1952 when losses were suffered by the steel strike, consumption was approximately 954,289 tons. Assuming 1 million tons to constitute normal consumption under conditions now prevailing, somewhat less than 300,000 tons of imports are sufficient to supplement supplies available from domestic sources. During 1952, 699,252 tons were imported, which as in the case of lead was more than twice our needs.

Excessive imports

Testimony indicated that imports of zinc in metal and ore are coming here at a rate in excess of the total consumption of the United States. Foreign zinc has beeen offered in our markets within recent months at a price of 9 cents a pound which is considerably below the cost of domestic production. The lead and zinc industries of the United States, the largest and most important in the world, are being put out of business rapidly by excessive imports.

Total imports of zinc in all forms in June amounted to 84,257 tons, and in July to 85,212 tons. By comparison, total United States shipments of slab zinc in September were 57,547 tons including domestic, exports, and deliveries to the Government. This means that enough zinc is being imported to close down every lead-zinc mine in the country and still leave a surplus above present needs.

Imports of lead and zinc for the first 8 months of 1953 and the increase over 1952 were as follows:

	1953, January–August	1952, January–August	Increase	
			Tons	Percent
Lead	432,583	348,072	84,511	24.2
Zinc	535,179	354,651	180,528	50.9

Imports of slab zinc have increased tremendously over previous years. Foreign metal brought in during the first 8 months of 1953 shows an increase of 139,951 tons over the corresponding period of 1952 as follows:

January–August, 1953	tons	196,964
January–August, 1952	do	57,013
Increase	do	139,951
Increase	percent	245.4

Notwithstanding the excess tonnage available for use from domestic production, imports of slab zinc for the year 1952 were 115,151 tons. And despite this substantial surplus in 1952, imports of slab zinc have increased 245 percent over 1952 during the first 6 months of this year to cause unemployment in the smelters of Illinois and mines throughout the country.

As to the need for increased tonnages in any particular grade of metal, domestic producers may be depended upon to expand production facilities to pro-

vide whatever quantities are required if they have assurance of reasonable protection for their investments against the competition of foreign metal offered at less than the cost of domestic production.

Mine output depressed

Consider the effect of these heavy imports on domestic mine production. Mine output of recoverable lead in August, the latest figure available, was 25,930 tons, the lowest since August 1948, when work stoppages in Missouri reduced the overall production, and the fifth consecutive month of decline.

The July output of recoverable zinc from domestic mines declined to 41,000 tons, the smallest monthly output since October 1949, compared to a production of 62,663 tons in May 1952, before the flood of foreign zinc broke the American market.

The vast mineral resources of the western United States probably exceed those of any similar area in the world. Testimony showed that new lead-zinc mines have been opened when the demand required additional production both in the west and in the eastern mining districts of Tennessee, Pennsylvania, Virginia, and Wisconsin. The problem bothering the domestic mining industry is not shortages.

Evidence demonstrated that the deplorable condition of the lead-zinc industry is the result of foreign materials being dumped in this country in the absence of adequate tariff protection for the domestic industry. Low-wage competition has grown more damaging because of the devaluation of foreign currencies. Aid from our taxpayers has been used to finance the purchase of stocks of metals under the socialistic practices of foreign governments only to have the stocks later released to break prices in the markets of the United States. Overstimulation of foreign production by high prices when United States mines were restricted by means of price controls has contributed to put United States mines in the fix they are in.

Tariffs lowered

The tariffs on zinc ores and metal have been lowered under successive reciprocal trade agreements negotiations to six-tenths and seven-tenths of a cent a pound, respectively, and on lead ores and metals to three-quarters of a cent and 1 1/16 of a cent a pound. These duties afford no protection of consequence against low-wage imports and devalued currencies.

Much more might have been presented in the way of statistical information to show the injury suffered by the lead-zinc mines and their need for relief from excessive imports. But it is plainly evident that when more than double the tonnages of lead and zinc we need are imported and offered at prices below the cost of domestic production, the consequences can only be disaster for an industry essential to national defense and security.

Of all the industrial metals in common use, iron, copper, lead, zinc, and aluminum, only lead and zinc are below OPS ceiling prices at this time. The precipitous 48.7 percent drop in the price of zinc from 19½ cents to its present level of 10 cents and the 36.8 percent drop of lead from 19 cents to the low of 12 cents emphasizes the serious injury suffered by the mining industry of the United States caused by excessive tonnages of foreign metals thrown on the domestic market.

Is it in the public interest to permit an industry which is the largest of its kind in the world, and which is essential to national defense and security, to be priced out of existence by a flood of foreign lead and zinc offered at less than the cost of domestic production? The President has stated that a strong domestic mining industry is vital to national security and the continued prosperity of the country.

In answer to the question is the survival of the lead-zinc industry of the United States of importance to the Copper and Brass Association, Theodore E. Veltfort, manager, answered: "I have already indicated by all means it is. * * * Of course, we need it. There is no question about that."

Higher costs

A combination of low prices and high costs makes it impossible to operate domestic lead-zinc mines at a reasonable profit. A comparison of current prices and wages with United States Bureau of Labor Statistics figures of past years shows the precarious condition now prevailing:

Year	Average wages per hour	Metal prices		Index of labor costs	
		Lead	Zinc	Wages	Per unit recoverable, lead and zinc
1939	$0.683	$0.047	$0.052	100	100
1949	1.565	0.158	0.124	229.1	269.9
1953	[1] 1.94	0.135	[2] 0.100	284.0	[3]

[1] July.
[2] October, 1953.
[3] Not available, probably 300 plus.

It will be noted that the labor production cost per unit of recoverable lead and zinc now is more than three times what it was in 1939. But 1939 was a year of depression for lead and zinc when prices were unprofitable and many mines and smelters were forced to curtail or suspend operations because of heavy imports of low-wage foreign metal following a tariff reduction on zinc. Relatively, therefore, it would seem that with costs 3 times the 1939 level, prices of lead and zinc at less than 3 times the 1939 prices, or 14.1 cents and 15.6 cents per pound, respectively, would be unprofitable.

The extent of the injury to the domestic mining industry caused by the excessive imports of foreign lead and zinc entering the American market at low prices may be measured to some degree by the cost of production in this country. The experience of the industry as testimony showed from the lead-zinc mining districts in the United States is that an average combined price of 31 cents for a pound each of lead and zinc is required to maintain a healthy domestic mining industry. This return would not support marginal mines, but would yield a reasonable profit to well-managed properties.

Complex ores mined nationwide

Lead-zinc mining is a national industry of consequence. Operations cover a wide territory from New York to California. Lead is produced in substantial tonnages from mines in 16 States and zinc in 19 States. But with very few exceptions production is from ores containing both lead and zinc in complex mixtures with zinc predominating in quantity as mine-production figures for the country show.

Because lead and zinc are mined in this country for the most part combined in complex ores under widely varying conditions, it is highly important to consider that price difficulties of either metal directly affect production of the other. It is the combined values of lead and zinc that make possible the mining of complex ores containing both metals. Consequently as a national industry consideration must be given to the cost of mining lead-zinc ores and to whether or not the realization from the combination of prices of lead and zinc recovered from those complex ores is sufficient to support a healthy mining industry. Mr. Vuillequez testified to the same effect concerning Mexican ores.

Imports offered at low prices

The Wall Street Journal on Monday, September 14, 1953, stated:

"Offers of foreign zinc again were reported at substantial discounts, with some metal said to have been available at 9¾ cents a pound ex-warehouse in New York area."

The Journal of Commerce reported on October 5, 1953:

"* * * there is plenty of foreign zinc being offered on the east coast at around 9 cents, and buyers have let their inventories slide as they await lower prices, which continue to be a distinct possibility."

On August 31, 1953, when the domestic price of lead was 14 cents the Wall Street Journal stated:

"Demand for lead from domestic sources last week was in good volume at 14 cents a pound, New York. Some foreign lead was offered to United States consumers last week at a price of 13¼ cents a pound, New York area delivery."

This accounts for the subsequent price break to its present level of 13½ cents.

Decline in employment

Approximately 25 percent of the production workers employed in the lead-zinc mines of the United States lost their jobs during the year ended July 1, and the

number is increasing fast. Recently smelters in Illinois have been forced to curtail production and lay off hundreds of workers because of the influx of foreign zinc.

Throughout the 19 States from New Jersey and New York in the east to Washington and Idaho on the west, where lead-zinc mining is an industry of importance, hundreds of communities and thousands of citizens depend on the payrolls of the mines. Lead and zinc mining for the most part is carried on in somewhat isolated areas where it is the only industry of consequence to support entire communities. Closing of the mines makes these communities become deserted areas and causes workers to lose their homes. Including the railroads and services industries dependent on work of the mines, and payrolls going to miners and their families, the loss in employment caused by excessive imports is many times that of the miners directly affected.

Imports and the closing of mines

Large corporations can protect themselves by moving to foreign fields and receive United States Government assistance in their efforts to produce profitably when metal prices drop too low to permit profitable operation under our wages and living standards. But where does that leave workers and their families and the smaller independent companies and their stockholders unless the Tariff Commission recommends constructive action to the President to correct the situation?

Concerning Arizona, testimony showed:

"The picture of Arizona lead and zinc mining industry since the flood of foreign metals is a drab one. The result of the price collapse was the closing down of the two large lead-zinc producers in the State and practically all of the smaller properties. Only one large producer is now operating, and operating at a loss; it is trying to save the property from being lost—once shut down, caving and flooding might prevent it from ever being reopened.

The lead-zinc industry in Arizona was a relatively young, growing industry, and the present condition of the market threatens to stunt its growth, if not completely wipe it out."

New Mexico sent word that from rannking fifth among the States in production of zinc in April 1952, with an output of 5,079 tons of recoverable zinc for the month, now not a pound of zinc is being produced. Lead-zinc mining has been a stable industry for many years and was continued during the depression years of 1930 to 1939. Large, well-equipped mines were opened during recent years. Employment at mines operating during 1952 dropped from 1,292 to 134 by October 1953.

Conditions in Nevada are similar to those reported by New Mexico. Production of lead and zinc has practically ceased.

In Wisconsin 30 mines were in operation in 1952; by September 1953 the number had dropped to 5. Approximately 495 men have been thrown out of work in the mines. Prospect drilling machines exploring for new deposits of lead and zinc numbered 45 in 1952. By September 1953 there were only eight.

Man-hours worked in Utah lead-zinc mines dropped from 2,038,568 for the first half of 1952 to 1,217,008 for the first half of 1953, a decrease of 40.3 percent.

Other States and mining districts presented a similar depressing picture. Some representatives of the mining districts reported their problems in person; others filed statements with the Commission.

Charles E. Schwab, representing the Idaho and Washington Lead and Zinc Emergency Committee, stated of the Coeur d'Alene district, one of the ranking lead-zinc producing regions of the world:

"At the present time lead and zinc, as such, are being mined at a loss. Only due to silver content has the district been able to carry on."

Of the newly opened mines in the Metaline district of Washington, he testified:

"A comparison of those lead-zinc districts of the United States which have no silver (such as Metaline) will reveal the unprofitable conditions existing without silver to pay for losses in mining lead and zinc."

Harold L. Childress, president of the Tri-State Zinc and Lead Ore Producers Association, composed of the major mining companies in the tristate zinc and lead mining district of Missouri, Oklahoma, and Kansas, testified concerning the serious injury sustained by the mines of his region. He presented the following comparison:

	Mines	Concentrate production				Hourly wages	Employment
		Lead		Zinc			
		Tons	Price	Tons	Price		
May 1952	68	2,138	$200.07	13,721	$135.00	$1.75	2,184
August 1953	17	385	166.50	3,662	56.00	1.25	357

Miles P. Romney, manager of the Utah Mining Association, presented information showing that all lead and zinc produced in Utah during the first 6 months of this year was at a loss. Some mines continue to operate by selective mining of high-grade ore, postponing development work and exploring for new ore reserves.

Clark L. Wilson, vice president of New Park Mining Co., an important independent producer in Utah, testified that the return to his mine on the market price of zinc is only 35 to 40 percent and the return on lead is 60 to 65 percent of the market price, but the mill treatment charge for concentrating the ore and the freight charge from the mine to the mill must be paid out of this return. He stated that the charges to maintain the property if it was closed down would bankrupt the company within 1 year.

Injury to workers

John Marshall, representing the Chemical Workers Union of Bartlesville, Okla., testified that the workers feel "the Tariff Commission will recommend to the President to relieve the serious condition which we face in this industry * * * and to protect the jobs and an industry which we feel is so essential to the American Government, particularly in time of war." He testified that men now were asking for work in his area.

Albert Whittaker, Jr., president, CIO Chemical Workers Union, Local 421, Jefferson City, Tenn., testified that the workers in the Tennessee Coal and Iron Division of the United States Steel Co. zinc mine at Jefferson City since October 12, 1953, have been reduced to 3 days work a week and their take-home pay cut approximately 50 percent in the face of a rising cost of living. They hope the Tariff Commission can develop a program to keep the workers employed in an industry they know, "so that they can maintain themselves in the decent standard of living."

Mr. Alton Thurman, president of CIO Chemical Workers Local 407, Jefferson and Knox Counties, Tenn., testified that his local represents workers employed by the American Zinc Corp. of Tennessee. Now only 3 of the 5 company mines remain in operation and further serious curtailment is in prospect. Workers laid off have been unable to find employment in local industry. There has been a cutback from a 6-day workweek to 5 days and a loss in take-home pay. A large new ore body was discovered in the area within the last few years.

George W. Haycock, representing members of the United Steelworkers of America working in the lead-zinc mines of Utah and Nevada, testified that the mines in his area were forced to close because of the excessive imports of lead and zinc or else were holding on at a loss. He cited wage cuts in the smelters of Pennsylvania and losses of employment in Illinois because of the fall in zinc prices.

Stephen J. Nagy, representing the workers at the New Jersey Zinc Co. plant, Palmerton, Pa., testified concerning the importance of the large plant, where he is employed, to national defense. He told of the production taken for Army and Navy use and important applications in atomic-energy reactors, the manufacture of explosives and for the production of steel. He testified the workers at his plant also were feeling the effects of the excessive imports and were beginning to suffer from curtailment of operations.

Importance of the lead and zinc mining industries

The lead and zinc mining industries of the United States under adequate tariff protection from the early years of the Republic until about the beginning of World War II grew to become the largest in the world.

Attention is directed to the importance of insuring the continuance of sound and healthy lead and zinc mining industries in the United States in competition with low-priced or subsidized foreign imports. The President stated the case clearly in his letter to Congressman Edmondson on May 11, 1953:

"A strong domestic mining industry is vital to national security and to the continued prosperity of our country."

The United States Bureau of Mines warned of the consequences to the security and economy of the United States of tariff reductions on lead and zinc as long ago as 1938 when cuts in the duties were proposed, stating that if the zinc industry is to compete with the low level of foreign prices and continue to supply national requirements it must become adjusted to the lower price level. The statement went on to say:

"To do this, costs of production will have to be reduced, chiefly by lowering wages and by selective mining of the higher grade portions of ore deposits, neither of which is desirable. Reduction of wages is contrary to present Government policies of increasing purchasing power, and the robbing of ore bodies is decidedly anticonservational and detrimental to the long-time welfare of the industry.

"The alternative would be a loss of part of the domestic zinc market to foreign producers. From the standpoint of public interest this likewise would be undesirable because it would aggravate the unemployment problem."

Thus it will be seen that when international tensions lessen to the extent that competitive world trade is restored, we are back again to the conditions described in 1938. Wars and great emergencies nullify the effects of tariffs. But wars and their aftermath, inflation, and additional tariff reductions have served only to make the problems of the domestic mining industry more difficult.

The effect of the reduced duties on the domestic industry was obscured by shortages and scare-buying during the Korean emergency and the recurring crises of the war and postwar years. Now with the lessening of international tensions and the return of competitive conditions in world trade the serious consequences of the concessions have become apparent.

It would seem to be in the national interest to consider that the proper function of international trade is to supplement rather than supplant domestic production. Particularly is this true in the case of metals and minerals essential to our economy and required for the safeguarding of our national security.

Factors for consideration

In view of the information presented and unforeseen conditions which have developed since the duty concessions were granted, including inflation, devaluation of foreign currencies, the socialistic practices of foreign government in the purchase and sale of metals, and the need for a strong mining industry to assure national security and provide defense against aggression, an upward revision of the tariffs on articles of lead and zinc to the maximum extent permissible is urgently and immediately needed.

Conclusive evidence was given to the Commission by the domestic lead-zinc industry to show the downward trend of production, employment, prices, profits, and wages in the mines and smelters of this country and the increase in imports relative to domestic production, higher and growing inventories and the decline in the proportion of the domestic market supplied by the domestic zinc mines because of excessive imports of lead and zinc at prices below the cost of domestic production.

Suggested remedies

Opponents of tariff relief for the domestic lead-zinc mines under escape-clause action acknowledging the need of a remedy for the serious situation which prevails, suggested the use of subsidies to support the mines and provide employment. The domestic producers without exception testified that they were opposed to subsidies for many reasons, and further that subsidies are not the cure for excessive imports.

As to quotas, members of the industry have concluded that with respect to complex ores and concentrates of lead and zinc a quota system of protection would prove complicated and difficult, if not impossible to administer fairly to all concerned. Therefore, it is believed that an antidumping tax affords a solution more in the public interest than the establishment of quotas on lead-zinc ores and concentrates.

The proposed tax is not a high-tariff measure but a tax to prevent dumping foreign metals on our markets at prices which are destroying the domestic industry. It is recognized that imports are needed to supplement domestic production. For this reason no taxes apply when the domestic market price is sufficient to permit the more efficient mines in this country to survive. At such levels the proposed import tax is removed, or becomes in effect a "vanishing tariff."

It is understood that protection in the form of an antidumping tax or "vanishing tariff" is not available under escape-clause procedure. In this event our proposal is directed to the legislation which may be considered as a result of the Commission's report of its investigation to the committees of Congress which requested the investigation. If the Commission confines its report to findings concerning the present and possible future effect of imported lead and zinc upon the competitive position of the domestic lead-zinc industry, Congress then from the Commission's findings can determine the changes to be made in the tariff status.

Lead-zinc mining industry essential to national security

The President has stated that a strong domestic mining industry is vital to national security and the continued prosperity of our country. High Government officials have recognized the deplorable plight of the domestic lead and zinc industry and suggested that the industry seek escape-clause relief. The governors and legislatures of many States have taken cognizance of this serious problem.

The National Lead and Zinc Committee, therefore, in behalf of the domestic lead and zinc mining industries, respectfully requests the Tariff Commission to recommend to the President that duties on lead and zinc be increased by 50 percent over the rates "existing on January 1, 1954."

Much more might be added in support of the need for constructive steps to be taken to assist in retrieving the ground being lost by lead-zinc mining in the United States and on the importance of a healthy mining industry to the defense and security of our country. To a certain extent imports are needed. But would it be wise, in the world of today, to take excessive imports at the expense of a crippled domestic industry?

However, we know from experience that members of the Commission are well-informed on the problems affecting the national economy. Workers and members of the mining industry are looking to you to take constructive action to help correct a situation which is causing much trouble for many of our people and threatens the future security and well-being of the country.

Respectfully submitted.

NATIONAL LEAD AND ZINC COMMITTEE,
OTTO HERRES, *Chairman.*

APPENDIX 3

STATEMENT FOR MINERALS, MATERIALS, AND FUELS ECONOMIC SUBCOMMITTEE CONCERNING ZINC MINES OF NEW MEXICO BY JOSEPH H. TAYLOR, VICE PRESIDENT OF PERU MINING CO. AND NEW MEXICO CONSOLIDATED MINING CO.

The large importation of zinc from foreiegn countries and the dumping of foreign zinc from accumulated stockpiles held by foreign countries has had a disastrous effect upon the zinc-lead mining industry of New Mexico. During April 1952, when the price of zinc started to break, New Mexico ranked fifth among the States in production with 5,079 tons of recoverable zinc. Now not a pound of zinc is being producted. Lead-zinc mining has been a stable industry in New Mexico for many years and was continued during the depression years of 1930 to 1939. During World War II this mining industry produced a considerable portion of the lead and zinc required for our armed services as evidenced by the following production figures:

Annual recoverable zinc produced from the State of New Mexico according to the U. S. Bureau of Mines statistics

Year	Zinc	Lead	Year	Zinc	Lead
	Tons	*Tons*		*Tons*	*Tons*
1925–29 average	23,351	6,730	1947	44,103	6,383
1938–42 average	34,446	4,688	1948	41,502	7,653
1943	59,524	5,723	1949	29,306	4,652
1944	50,727	7,265	1950	29,263	4,150
1945	40,295	7,662	1951	45,419	5,846
1946	36,103	4,899	1952	50,975	7,021

The break in prices for lead and zinc, starting during the spring of 1952, was not caused by lack of consumption of these metals nor by increased domestic production of these metals but by increased imports of these metals and dumping of foreign metals. These imports of zinc continued and during July 1953 imports of zinc in all forms reached 85,212 tons while the consumption was but 74,204 tons. This shows 11,008 tons more imports than requirements and all domestic mine production of recoverable zinc is surplus.

The tariffs on zinc metal and zinc ore have been lowered by successive reciprocal trade agreements to seven-tenths of a cent and six-tenths of a cent per pound, respectively, and on lead and lead ores to one and one-sixteenth of a cent and three-quarters of a cent per pound, respectively. During this period of successive reductions in tariffs, the cost of production in this country has more than tripled due to increased wages paid to our miners and higher cost of supplies. The wages paid to miners in many of the countries shipping lead and zinc to this country are less per day than our miners receive per hour. It is evident that the present tariff is so small that it is no protection to our mines nor to our miners.

The United States Tariff Commission saw fit to state in a report for the period 1949–50: "In most foreign countries embargoes, quotas, licensing and exchange control regulations have become more important than tariffs as means of restricting imports." With the possible exception of Canada, every foreign country sending lead and zinc here has within the past few years devalued its currency. The weighted average of such devaluation based on imports of lead and zinc is in excess of 27 percent. These foreign countries have taken advantage of our Trade Agreement Act which reduced tariffs by controlling their imports and dumping their products to get dollars, and, in addition, many of them have received aid and funds to build up their zinc-lead industry and later have shipped these metals into this country at very low prices.

Following is a list of mines which produced zinc during the fiscal year ending June 30, 1952, as given by the State inspector of mines. The number of employees as given by the State inspector of mines, or as of April 1952, and the number of employees as of November 1953 are tabulated below. The total for April 1952 is 1,254 and the total for November 1953 is 44, a drop of 1,210 employees at the mines.

Mines in operation during 1952 producing zinc ore

County	Mine	Number of employees	
		1952	November 1953
Grant	Atlas	5	0
	Hanover	153	20
	Oswaldo No. 1	162	0
	Oswaldo No. 2		
	Hornet	19	0
	Groundhog	311	4
	Kearney	277	10
	Pewabic		
	Shingle Canyon	6	0
	Royal John	12	0
	Kentucky Lease	5	0
	Bullfrog	232	8
	Combination		
	Hobo		
	Pearson		
	Princess		
	Slate		
Luna	Cooks Peak	4	0
	Mahoney	2	0
Socorro	Linchburg	32	2
	Nitt	8	0
	Waldo	7	c
Hidalgo	Homestake	2	0
	Silverhill	3	0
Santa Fe	Pennsylvania	4	0
	Tom Payne	10	0
Total (26)		1,254	44

Many of these employees received unemployment compensation for 24 weeks. Some have found employment elsewhere and many are still unemployed. Their families have been obliged to accept a lower standard of living. In most every mining community for each mine employee there are other people employed in services, transportation, power, and professions who directly or indirectly are supported by the operation of the mine. These are also affected.

The annual report by the State inspector of mines for the year ending June 30, 1952, shows the value of zinc production in New Mexico as $13,273,709 and the lead production $1,987,928, a total of $15,261,627. More than half of this was paid to the people of New Mexico in wages and salaries. The remainder went for power, transportation, taxes, supplies, and miscellaneous items, including profits.

Over the past two decades, less than one-third of the zinc required in the United States came from foreign mines and more than two-thirds from domestic mines. It is not our wish to prohibit the importation of zinc and lead but to control the importation and protect our domestic mining industry. The industry is not asking for a tariff when the prices of lead and zinc are high, but does want an import tax that will stop dumping of foreign metal and will keep our domestic mining communities from becoming ghost towns.

Suggestions have been made for subsidies, premium prices, and price supports. All such methods require appropriations by the Federal Government and are not conducive to economical production in the mining industry. A quota system has also been suggested. However, because of the fact that lead and zinc come in as ores, concentrates, and refined metal, it would appear that there would be great difficulty in administering the quota system. It is not our desire to advocate high tariff to cut off imports but rather a stabilizing tax to control dumping.

It is to be remembered that during World War II, in order to cope with the emergency, the lead-zinc mines exhausted their reserves and were unable to carry on sufficient exploration and development to maintain such reserves and that in May 1949 the price of zinc fell so low that many mines were forced to close or mine the richest ores to keep going. Then, during the so-called police action in Korea, when there was a ceiling of 17½ cents per pound and later a ceiling of 19½ cents per pound on zinc, the foreign price was as much as 50 percent higher and domestic consumers were unable to get their requirements.

To sum up; the excessive importation of lead and zinc from countries having low wage scales has had a disastrous effect upon the domestic mining industry. Hundreds of men in New Mexico are out of work. All zinc mines in this State are closed down. This is becoming progressively worse, and in an emergency the cost of reopening these mines will be increasingly high. In our opinion, tariff protection is required to save the lead-zinc mining industry of New Mexico.

APPENDIX 4

BOSTON WOOL TRADE ASSOCIATION,
Boston, Mass., January 6, 1954.

Hon. GEORGE W. MALONE,
Chairman, Minerals, Materials and Fuels Economic Subcommittee,
Senate Office Building, Washington, D. C.

DEAR SENATOR MALONE: We appreciate very much your permission, transmitted to us by Committee Counsel Jerome S. Adlerman, Esq., to submit a statement of our views regarding wool as a strategic commodity. The following is our statement:

The members of this association deal in wool, in its greasy state as it comes off the sheep, and in the products of its early processes, namely, pulled and scoured wools, tops, noils, and wastes. Literally hundred of grades and types of wool are grown in this country and abroad. We are a connecting link between the growers of these wools and the domestic wool-textile manufacturers, who use varying grades, types, or blends of wools, or of tops, noils, or wastes. Hence, we are vitally interested in a healthy domestic woolgrowing industry as a source of supply. With that industry we have a common vital interest in a healthy American woolen-manufacturing industry as our sole customer.

The domestic woolgrowing industry has for several years been recognized as an industry essential to national defense. The Government has tried to encourage its growth by price supports, tariffs, and preference in military pro-

curement. Despite these encouragements, domestic production has dropped from 202 million pounds of scoured wool in 1942 to an estimated 127 million pounds in 1953. In no year during the period, has the total domestic production exceeded one-third the total wool consumed by the manufacturing industry of this country. Indeed, with respect to population gains, our dependence upon foreign sources of supply is steadily increasing. Can it be that this is connected to the fact that wool represents only 25 percent of the return to the growers, whereas lamb represents 75 percent, these figures being based on the average of the last 5 years for which figures are available.

It seems clear that, if a substantial domestic production of wool is essential to our national interest, a healthy American wool-manufacturing industry is equally essential. The great bulk of wool-manufacturing facilities outside this country are in England and continental Europe, poorly located in the event of war. But our domestic manufacturing industry is in a condition that may properly be described as dangerously deteriorated. What has happened is indicated by United States census figures of domestic consumption of raw wool (scoured basis) which dropped from a high of 748.1 million pounds in 1946 to 463.1 million pounds in 1952. During the period from January 1949 to December 1953, when our country generally enjoyed its greatest prosperity and employment, 132 wool-textile mills that had employed 48,000 persons, ceased operations. Many mills presently operating are producing goods on curtailed schedules and incurring heavy losses.

These declines in the wool-growing and wool-manufacturing industries represent not only serious setbacks to our national defense effort, but also staggering blows to the persons, families and areas dependent upon these industries. The causes and possible remedies of these decline are of great concern to all of us. As might be expected, the causes are numerous and sometimes obscure; the more apparent remedies ill conceived and potentially "cures worse than the disease."

Our purpose is to state and analyze for you what we consider the most important factors involved in these declines, and to give our best objective judgment of what ought to be done.

The first and foremost problem, affecting grower and manufacturer alike, is the decline in the domestic consumption of raw wool, or stated differently, the decline in the domestic manufacture of raw wool (the manufacturer being the consumer of raw wool). This can be explained only by a declining demand for the products of the domestic manufacturers. This falling demand (primarily at the retail level) must be due to the satisfaction of the retail demand either by (*a*) an increasing quantity of imported wool products, or (*b*) more successful marketing of products competing with wool products, or (*c*) a smaller quantity of products due to adverse business conditions. We suggest that this last reason is inapplicable, but that the following evidence is conclusive as to the importance of the first two:

(*a*) *Increased imports of wool textiles.*—Despite adverse conditions indicated above in the domestic manufacture of raw wool in 1952, and despite a tariff on imported wool textiles, 24 million square yards, a 30-year peak, were imported into this country in that year. Indications are that the yardage imported in 1953 will exceed the 1952 peak by 20 percent.

(*b*) *Marketing of products in competition with wool.*—Since the end of World War II, there has been an almost incredible increase in the production of manmade fibers used in apparel. According to Textile Economics Bureau, Inc., domestic production of noncellulosic fibers (including most synthetic fibers used in apparel with the exception of rayon) was 54 million pounds in 1946. In 1952, the production of these fibers was 263 million pounds, an increase of almost 500 percent. The 1953 production is practically certain to exceed 300 million pounds, and it is estimated that the productive capacity for these fibers in July 1954 will be at an annual rate of 510 million pounds.

With respect to the increase of imported wool textiles, we believe that any increase in the tariff necessary to equalize foreign labor costs not compensated by differences in productivity, should be imposed at once; and that our self-interest in this respect clearly outweighs all other considerations. However, if our suggestion hereafter contained were adopted, with the effect of greatly reducing the material costs of our manufacturers, such a tariff increase might not be necessary.

While we in the wool business are greatly apprehensive about the invasion of the apparel market by synthetic fibers, we are not so much concerned with quality and performance comparisons as we are with the great competitive

advantage enjoyed by synthetic fibers due to the 25½-cent tariff per clean pound of imported wool, pyramided as it goes from process to process and climaxed when it reaches the retail store with the 60 percent added to the wholesale price to give the retailers the 40 percent gross profit they claim experience has demonstrated necessary for successful merchandising. Figures as to the total of this burden are difficult to arrive at, but they can be computed within reasonable limits as follows: Taking our average annual consumption of clean wool for the past 5 years, 1948 through 1952, at about 400 million pounds, we assess the duty at 25 cents for a total base cost of $100 million per year. Based on conversion figures recognized in the Tariff Act, whereby the duty on raw wool requires a compensatory rate of 37 cents on each pound of cloth, we then add 50 percent of the $100 million, bringing the total at this point to $150 million. This still has to be carried forward to the garment, but if we disregard this further step and add only the 60 percent retailer's markup to the $150 million, namely $90 million, we arrive at a grand total of $240 million per year as the cost to the consumer of the original $100 million charged on all wool consumed. As indicated above, domestic wool production has accounted for only one-third the domestic consumption of wool. Hence, the domestic wool-growing industry has received in increased price due to the imposition of the tariff on imported wool only approximately $30 million out of the grand total of $240 million paid by the American consumer on account of a tariff levied for the grower's protection.

We submit to you, in the strongest possible terms, that this burden upon the American wool-textile industry should be eliminated. It contributes relatively little to the domestic woolgrower. It increases the cost of wool products to the American consumer by enormous amounts, thereby destroying the market for those products while subsidizing the development and advertising of synthetic fibers.

While we urge you to recommend the elimination of the import duty on raw wool, we also recognize the necessity of the domestic wool producer for the same kind of protection against cheap labor in foreign growing areas. We feel this can best be achieved by direct payments not subject to the pyramiding inevitable in any type of duty.

In summary, we wish to reiterate that conditions in the woolgrowing and wool-manufacturing industries in this country are extremely unsatisfactory; that major causes of these conditions are the importation of wool products and the enormous subsidy being given to synthetic textiles by the pyramiding of the duty on raw wool; that we recommend any necessary increase in the duty on imported wool products; that we strongly urge the elimination of duty on raw wool; and that we recommend adequate payments to the sheep-growing industry to insure a steady and healthy growth of that industry.

Very truly yours,

BOSTON WOOL TRADE ASSOCIATION,
E. BENTLEY, *President*.

Total of farmers reporting sheep		320,314
Total of farmers reporting 25 or less	155,354	
Total of farmers reporting 25 to 49	55,869	
Total of farmers reporting 50 to 99	26,705	
Total of farmers reporting 100 to 299	14,649	
Total of farmers reporting 300 to 599	3,977	
Total of farmers reporting 26/7	[1] 57,834	
		314,388
		5,926
Total of farmers reporting 600 to 999	1,908	
Total of farmers reporting 1,000 to 2,499	2,711	
Total of farmers reporting over 2,500	1,307	
		[2] 5,926

[1] 57,834 are listed as owning but not shearing sheep. They owned an average of 26/7 sheep each.

[2] We make the division at the 600 mark on the purely arbitrary basis of feeling that a grower earning $5 per head, another arbitrary figure, could conceivably think he was earning his living solely from sheep raising with an income of $3,000. Below this number he could scarcely be considered as wholly dependent on sheep. On this basis, the number solely dependent on sheep raising is surprisingly small at only 5,926.

Source: These figures are taken from the U. S. Census of Agriculture as of Apr. 1, 1950.

Domestic wool production

	Number sheep	Weight, grease wool	Price	Cash receipts	Percentage of gross income from wool	clean weight
			Cents			
1947	30,953,000	251,425,000	41.9	$105,409,000	20.6	153,000,000
1948	28,649,000	231,770,000	48.7	112,962,000	21.4	137,000,000
1949	26,382,000	212,899,000	49.3	105,009,000	22.8	121,000,000
1950	26,387,000	215,422,000	57.3	123,340,000	24.0	119,000,000
1951	27,357,000	225,545,000	99.5	224,515,000	32.2	118,000,000
Total	139,728,000	1,137,061,000		671,235,000		
Average 1947–51	27,945,600	227,412,200	59.0	134,247,000	24.8	

Domestic lamb production

	Total sheep and lambs slaughtered	Percent sheep to lambs	Average price per hundredweight sheep	Average price per hundredweight lambs	Gross income sheep and lambs
1947	18,706,000	13.8	$8.39	$20.50	$405,907,000
1948	17,371,000	16.3	9.69	22.80	414,142,000
1949	13,780,000	10.3	9.27	22.40	354,900,000
1950	13,244,000	9.9	11.60	25.10	390,805,000
1951	11,418,000	11.6	16.00	31.00	472,468,000
Total	74,519,000				2,038,222,000
Average 1947–51	14,903,800				407,644,400

Source: Agricultural Statistics, 1952, U. S. Department of Agriculture.

Appendix 5

Statement of Wesley E. Disney on Behalf of Ozark-Mahoning Co.

This statement is made on behalf of Ozark-Mahoning Co., of Tulsa, Okla.

Ozark-Mining Co. is in the business of mining and processing fluorspar. It has plants at Rosiclare, Ill.; Jamestown, Colo.; and Northgate, Jackson County, Colo. Its annual production of fluorspar at the Rosiclare plant is 30,000 tons to 38,000 tons of acid-grade fluorspar and about 12,000 tons of metallurgical grade. At the Jamestown, Colo., plant it produces 10,000 tons of acid-grade and no metallurgical-grade fluorspar. The Northgate, Colo., plant has been in the process of coming into production during the part year; its annual capacity is estimated at 30,000 tons of acide-grade fluorspar and no metallurgical-grade fluorspar.

Since 1944 the company has produced, of acid-grade fluorspar, 323,910 tons at Rosiclare, 63,611 tons at Jamestown, and 14,939 tons at Northgate, making a grand total of 402,460 tons.

Ozark-Mahoning has been in the business of mining and processing fluorspar since 1939. Much of the profits made have been plowed back into the business for the purchase of leases, opening of mines and other expenses. Its investment, as of the present, is approximately as follows:

Illinois-Kentucky District	$1,800,000
Jamestown, Colo	400,000
Jackson County, Colo	1,450,000
New Mexico	50,000

The operations in Northgate (Jackson County), Colo., and in New Mexico have incurred substantial losses to date.

The wage rates paid by Ozark-Mahoning run from $1.35 per hour to $1.84 per hour for common labor. Most of the common labor producing foreign fluorspar receives from $1 to $1.25 per day. That is particularly true of Mexico, one of our chief foreign competitors.

The staggering increase in imports during the past 4 years is illustrated by the following statistics:

Year	Consumption of all grades	Shipments from domestic mines	Percent shipments from domestic mines are of total consumption	Imports	Percent imports are of total consumption
	Short tons	*Short tons*		*Short tons*	
1949	345,221	236,704	68.6	95,619	27.7
1950	426,121	301,510	70.8	164,634	38.6
1951	497,012	347,024	69.8	181,275	36.5
1952	521,500	333,769	64.0	359,402	68.9

In 1949 shipments from domestic mines plus imports were substantially equal to consumption; in 1950 and 1951 these combinations exceeded the consumption figures by 30,000 to 40,000 tons, but in 1952 the surplus soared to about 170,000 tons, much of which was undoubtedly going into the Government stockpiles. Imports to the Government stockpiles have almost ceased about the middle of 1953 and hence this surplus is seeking currently to displace domestic production going to United States consumers.

In addition to these statistics, we estimate from figures already procured that the imports for 1953 will exceed any previous year.

About 100 mines in the United States produce fluorspar but, of these, 8 account for nearly one-half of the domestic production. Illinois is a premier fluorspar-producing State, producing 39 percent of all fluorspar in 1939. Kentucky is second, producing 23 percent in 1947, 19 percent in 1948, and 19 percent in 1949. The southern Illinois-western Kentucky area currently accounts for about 78 percent of the domestic production. Fluorspar is produced in many other States, chief among them, in order of rank, are New Mexico, Colorado, Utah, Nevada, and Montana.

Imports grew from 0.6 percent in 1952 to 28 percent in 1949. Consequently, shipments of fluorspar from Illinois were 30 percent less in 1948. In 1950 shipments were the smallest since 1940. Kentucky production was 29 percent less in 1949 than in 1948 and was 29 percent under the average for 5 years—1944 through 1948. Shipments showed a 25 percent decline from 1948. Illinois (51 percent) and Kentucky (27 percent) supplied 78 percent of the fluorspar shipped in 1948 and 1949. Shipments from Illinois and Kentucky were 28 percent less in 1949 than in 1948, compared with the loss of 29 percent from other producing States.

Deliveries of fluorspar to consumers in the United States totaled 325,780 short tons in 1949 (235,921 tons from domestic mines and 89,859 tons from foreign sources). In 1948 deliveries to consumers totalled 442,336 tons (of which 331,105 tons were from domestic mines and 111,231 tons from foreign sources). The total deliveries to steel plants in the United States in 1949 declined to 188,047 tons (269,304 tons in 1948); those of hydrofluoric acid plants decreased to 86,779 tons (106,857 tons in 1948), and those to glass and enamel plants fell to 34,482 tons as against 45,602 tons in 1948.

The tariff on metallurgical grade fluorspar is $7.50 per short ton or $8.40 per long ton. The tariff on acid grade (that is, all over 97 percent CaF_2) fluorspar has been subject to successive reductions until it is now only $1.87½ per short ton as compared to an original figure of $5 per short ton. This country is able to produce at least 70 percent of the acid grade fluorspar and of the other grades of fluorspar needed. Much of the expansion in the production of the acid grade fluorspar has been effected under the urging of governmental agencies.

Fluorspar is a mineral which took on great significance during the war. Every effort was made to develop reserves of fluorspar in this country. The War Production Board first made fluorspar a critical material and then designated it as a strategic material.

During both wartime and peacetime fluorspar enters into the industrial life of the Nation in many ways. The most important are as follows:

1. Fluorspar increases the capacity of the open-hearth steel furnace by making the slag more liquid and allowing the furnace to operate at a lower temperature, and thus prolongs the life of the furnaces.

2. Fluorspar enters into freon which is the propellant functioning in the aerosol and DDT bombs which, due to their use in insect control, contributed greatly to the effectiveness of our Armed Forces and to the health and comfort of the people. Freon is perhaps the most important refrigerating medium now available for air-conditioning and for refrigeration generally. A September 1953 industry appraisal stated: "The impact of air-conditioning on the economy and social structure of the United States is a growing force, one which has been largely underestimated. Our way of life will be changed in the home and in industry. Certainly industry's geographic position will undergo a profound revolution. The social implications of these changes will probably be as far reaching as those that occurred between the Victorian age and the 1920's.

3. Fluorspar, by way of hydrofluoric acid, is making 100 octane gasoline.

4. Fluorspar is an important component part entering into the making of the atomic bomb. It requires six atoms of fluorine (a fluorspar derivative) to each atom of uranium to effect the separation of U–235 from U–238.

5. Present plans, we understand, call for greatly augmented production of military airplanes. This will require an increase in the production of aluminum. Something on the order of 130 pounds of fluorspar are consumed in the production of every ton of aluminum metal.

6. Five or six pounds of fluorspar are used in every ton of open-hearth steel, and it increases markedly the furnace capacity. As such, it is very essential both as a war mineral and as a peacetime ore.

7. The ceramic grade is used in making many kinds of opaque glass in dense, opaque, white, and colored enamels used as facings and coatings on sanitary bathrooms, hospital and plumbing fixtures, stoves, refrigerators, etc.

8. Acid grade fluorspar is the only acceptable economic raw material for the preparation of hydrofluoric acid. In turn, hydrofluoric acid is used principally in the manufacture of aluminum, high octane gasoline, insecticides, refrigerants, and in many other processes in the chemical industry.

The usual grades of fluorspar are as follows:

Metallurgical	85 percent CaF_2, 5 percent silica
Ceramic	95 percent CaF_2, 3 percent silica
Acid or chemical	97 percent CaF_2, 1 percent silica

Domestic freight rates are an element in the fluorspar business. Railroad freight proposal SWFB Proposal 62916 dated January 6, 1953, provides for milling-in-transit arrangements at Rosiclare, Ill., and Marion, Ky., on carload shipments of fluorspar moving from Mexico via Rio Grande crossings. This proposal was approved with an effective date of May 1, 1953. The result is that Mexico fluorspar moving to Rosiclare, Ill., or Marion, Ky., for blending or other milling purposes will incur about $5.50 per ton less freight charges than obtained previously in moving over the same routes to the ultimate consumers in central and trunk-line territory. This operates to deluge the domestic fluorspar industry with a flood of Mexican fluorspar imports, both metallurgical and acid grade.

The net result of the activities described, including the low tariff rate on acid grade fluorspar and the discriminatory freight rates described, will be to stifle the American fluorspar industry. The pressure of imports on the Atlantic seaboard and continuing increases in freight rates have cut off all shipments from Rosiclare, Ill., to the Atlantic seaboard. The cheaply produced and ever-increasing quantities of Mexican fluorspar (Mexico consumes none of its own production) have caused declines in domestic prices, when all costs in America, particularly labor, continue to increase. The Los Lunas, N. Mex., mill of Shattuck Denn Mining Corp. is shut down for an indefinite period because of declining prices.

Ozard-Mahoning Co. is unable to dispose of any of its Jackson County (Northgate), Colo., plant's production to domestic industry. It is able to operate only as long as it has a contract with the General Services Administration. Stockpiling of imported material by the Government is now practically complete. That will shut off so much of the demand as has been heretofore created by the stockpiling operation.

Ozark-Mahoning, joined with other fluorspar producers, has filed a petition before the Tariff Commission of the United States for relief. A copy of the said petition is hereto attached as a part hereof. It pleads that the tariff on acid grade fluorspar be corrected and that import quotas be placed upon foreign

shipments. It also asks the Tariff Commission for an order or recommendation to the executive department to that effect.

This briefly describes the plight of the American fluorspar producers who frankly admit the necessity, at present, for about 30 percent of imports; but they deny the right of the importers to take advantage of the situation to the extent that the American fluorspar business shall be completely destroyed.

APPENDIX 6

NOVEMBER 16, 1953.

Subject: Report on beryl ore.

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
SUBCOMMITTEE ON CRITICAL RAW MATERIALS,
United States Senate, Washington, D. C.

GENTLEMEN: This report is presented to the committee as an attempt at a brief, realistic appraisal of the beryl ore supply and the position of this mineral in industry, the national-defense effort and the national economy as known to the Beryllium Corp.

Beryl ore is a source of beryllium metal, which is utilized mainly with other metals to produce alloys which have become vital in modern engineering and industrial applications; typified from weapons to washing machines, from refrigerators to radar components. The important alloys in order are currently copper with beryllium, aluminum with beryllium, magnesium alloys with beryllium added, nickel beryllium and beryllium as an added element to certain stainless steels. Chiefly, the copper beryllium alloys containing from one-half percent beryllium to approximately 2 percent beryllium account for about 90 percent of the usage.

Beryllium oxide is becoming important as a refractory in certain ceramic bodies for use in jet blast units and rocket applications.

Beryllium metal has been identified as a material of importance in nuclear engineering applications (see Atomic Energy Commission).

Beryllium alloys were well established in 1929, but industrial significance was not achieved until 1937. From 1937 up until now, domestic mining production has never been able to cope with the increasing demand for raw material.

In this same time period the price of beryl ore to industry has increased from approximately $2.50 per unit to approximately $50 in 1952, or from approximately $25 per ton to approximately $500 per ton, an increase of approximately 2,000 percent. In 1937 domestic mining produced 75 tons and imports accounted for approximately 185 tons. In 1950 and 1951, domestic mining produced approximately 10 percent maximum of the total beryl supply which averaged for each year about 5,000 tons. In 1952 by estimate, domestic mining accounted for approximately 7½ percent of the total supply.

From this it seems to us that increasing the price of beryl is no assurance that it will increase the supply. The basic problem is related to the geologic occurrence of the mineral and its geographic location, rather than to attending economic factors of production. It is also evident that industry has had to rely on foreign sources to develop its markets and maintain the demand for the alloy. The principal producing areas for beryl ore are, and have been, Brazil, Africa, India, Argentina, and Portugal.

This dependence on foreign sources of supply has always been a serious problem to American industry. Since World War II, and more recently the Korean situation, the problem has grown, creating urgencies affecting our national security.

Both the beryllium industry and United States Government agencies have worked separately and in collaboration to overcome this critical deficiency in raw materials.

Toward this end our company, the Beryllium Corp., which is the world's largest producer of beryllium alloys, extended itself to the utmost limit of its own resources to stimulate and promote domestic production. Our activities have included direct mining exploration, research and technological assistance to independent miners and other potential producers.

At the same time, however, in order to protect our own manufacturing position and meet the demands in the national defense program, we were forced by necessity to extend our efforts abroad. This we did by geologic surveys in the Western Hemisphere and Africa. We also stimulated production through technical cooperation and setting up suitable procurement agencies in these areas.

The work of Government agencies, such as the Bureau of Mines, the United States Geological Survey, the DMPA, the EPS, and others, has contributed substantially in furthering the overall program. The results of independent work and investigation of the beryl program carried out by these agencies provided material assistance and guidance to the industry as a whole.

However, in spite of the best efforts to date the evidence points to the unfortunate but realistic fact that the beryllium industry is still dependent on foreign sources for its raw materials.

In view of the foregoing and in order to promote self-sufficiency in beryl supply the following recommendations are respectfully submitted:

1. Building of an adequate beryl stockpile to safeguard the United States against critical shortage as we develop our domestic resources.

2. Providing funds to suitable agencies of the Government for a suggested 10-year domestic stimulation program in exploring, prospecting, and developing all possible ore sources including classic beryl ores as well as other beryllium-bearing ore bodies.

3. Providing funds to suitable Government agencies for research, including beneficiation, or high-grading, and other extraction methods.

4. The encouragement of beryl production in other Western Hemisphere areas. These areas should be as close to home as possible. Since Brazil is our major current source of supply and surveys have shown adequate reserves in that country, we recommend encouragement and assistance in Brazil's beryl program.

Respectfully submitted.

MATTHEW J. DONACHIE,
President, The Beryllium Corp.,
Reading, Pa.

APPENDIX 7

THE DOW CHEMICAL CO.,
Midland, Mich., November 20, 1953.

Titanium

Senator GEORGE W. MALONE,
Chairman, The Senate Minerals, Materials, and Fuels Economic Subcommittee of the Committee on Interior and Insular Affairs,
Senate Office Building, Washington, D. C.

MY DEAR SENATOR: I trust that my telephone conversation on Wednesday, November 18, with Mr. Adlerman and our Mr. Robertson's visit a few minutes later will convey to you that a date of long standing in Schenectady prevents my attendance at your hearing on November 25, which was later changed to the 23d or 24th.

I am glad that my conversations with Messrs. Adlerman and Robertson give me a better idea of what you wish, and, though I may not attend, I would like to make the following comments regarding titanium for whatever you wish to make of them.

The Dow Chemical Co. is convinced that titanium has tremendous value, both for military and for peacetime uses. We are impressed by its ability to force its use, rather than relying upon the promotional approach required by many materials. For these reasons, plus the fact that we are experienced in the production of magnesium, chlorine, and related fields of endeavor, we feel that our company has a place in the titanium future, and we have been conducting experiments which have been in the pilot-plant stage for several years. I believe that the armed services' insistence on high quality metal, while difficult at times, has been a wise approach, and for this reason I feel that any process we may adopt must produce the highest quality metal. Our pilot-plant production meets these demands, but as a result the progress has been slow.

In reviewing our experiences, I believe that we are at present, relatively speaking, in the same position we were in magnesium in the early 1920's. Years later (1939) we had developed a process which has proved its worth and was ready for the emergency which arose at that time. It is my opinion that the pressure for production presently being exerted by the Government will accelerate progress in titanium appreciably; but I doubt if any company will be in a position to erect a large plant which will not be quickly obsolete in less than from 10 to 15 years.

Since the armed services are convinced that they need in excess of 25,000 tons per year, I believe that the program of encouraging producers to build plants

at Government expense is the only solution to the problem; but it must be expected that this type of operation will lead to waste and mistakes and that obsolescence will be very fast. This view can be substantiated by the fact that in magnesium today the only successful plants are the ones which we built in the locations which we had already selected after several years of study, and that other plants operating on our process, and other proven processes, were unable to compete, primarily because of geographical and economic location.

Our company would prefer to continue its present program in the titanium field. I am not as yet convinced that we should stay in it, because we are not satisfied that any process which we presently have will be competitive a few years hence. Certainly nothing we have at present warrants a large expenditure of money. I recognize that the accelerated program which the services desire will be of assistance to us, since it will permit us to market our product and since the existence of the program will be a spur to our technological efforts. I also believe that several of the established producers are at least 3 years ahead of us technically, and point out that this may be an important factor in our future plans.

Based on our experience with magnesium, I do not believe that location is presently an important item in the long run. I consider the first ingredient to success to be an enthusiastic organization of 10 or 15 men in any reasonable location, rather than the proximity to cheap power, raw materials, or nearby market.

I suggest that progress in titanium development will be greatly facilitated by permitting present producers to write off their facilities at a rate even faster than 5 years, since my experience indicates that obsolescence presently is occurring in less than 2 years.

Finally, I would call your attention to the patent situation. The present patent laws are adequate and I do not recommend that any changes be made, but I do suggest that instructions to the Patent Department to give priority to titanium process applications will accelerate progress by permitting inventors to know where they stand, without delay, in respect to competition, thereby giving their management assurance that they are not building facilities which will come into patent conflict with other groups working in the same field.

Sincerely yours,

RALPH M. HUNTER,
Staff Coordinator of Electrochemical Activities.

APPENDIX 8

NATIONAL TILE & MANUFACTURING CO.,
Anderson, Ind., February 24, 1954.

Hon. GEORGE W. MALONE,
United States Senator, Senate Office Building,
Washington, D. C.

DEAR SENATOR: Thanks for your letter of the 17th in which you advised you have nearly finished the hearings your committee has been holding on the subject of tariffs.

I doubt very much if there is anything I could put in writing that you have not already very well covered and it is probable that my testimony before the committee would have been only repetitious of the facts presented by many others. I might have gotten in a few words slightly off the subject, such as registering my belief that low tariffs and opposition to the Bricker amendment are lengthy steps in the program underway during the last 20 years to terminate the independence of the United States and the freedom and prosperity of its people.

My opinion is that the many controversial subjects in the Government during the past 20 years that have been confused and denounced by Communists and New Dealers have served mainly to divert our attention from the main point which is, How long will the United States remain an independent nation? We cannot start a war, win a war, or end a war without instructions from the United Nations. At the last election we thought we were voting to end the operation of our country by the British Empire and to thoroughly abolish the Acheson-Dulles State Department, the give-away program, and for the privilege of keeping some of our tax money to promote prosperity here in our own country.

Low tariffs are already hurting American industry and the American worker and many people are saying that if Eisenhower will adopt a real Republican

program, our country will have a period of prosperity extending for many years into the future. We cannot subsidize the world and expect to have money here to buy foreign products even though the price is ridiculously low.

People are astounded that a Senator who works hard and conscientiously to eliminate spys and traitors that have infiltrated top and confidential levels of our Government is attacked for his effort, and the subversives he exposes are given sympathetic praise and returned to their nefarious activities.

Obviously the power of those who directed the destructive course of preceding administrations remains unrestricted and it is sabotaging the future of both our President and the Republican Party.

Americans want opportunity, not doles. They want Government for Americans, not foreign dictation and entanglements. Our President has the rare opportunity to go down in history with Washington and Lincoln as the savior of his country or as being responsible for its surrender to the United Nations and foreign intrigue.

Sincerely,

H. R. ALEXANDER, *Chairman.*

The United States and Its Foreign Trade Position

A SPECIAL STUDY PREPARED BY THE

NATIONAL INDUSTRIAL CONFERENCE BOARD, INC.

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

155 EAST 44th STREET NEW YORK 17, N. Y.

Summary of Findings

THE UNITED STATES AND ITS FOREIGN TRADE POSITION
THE ELECTRICAL MANUFACTURING INDUSTRY

Summary

The highlights of the factual data, charts, and tables of this report - a large portion of which has never before been available for general public use - may be summarized as follows:

1. The dollar value of total sales of U. S. corporations manufacturing electrical products, as well as the dollar value of both exports and imports of such products, have risen sharply in the postwar years, 1946-53 (inclusive), but at widely varying rates.

a. Total sales during the postwar years have averaged 6.6 times their average for the prewar years (1935-39, inclusive).

b. Exports have averaged in the postwar years 4.9 times their prewar average.

c. Imports have averaged in the postwar years 4.6 times their prewar average.

(Details in Sections I and II)

2. While total sales in 1952 were nine times their prewar average, imports in 1952 were twelve times their prewar average. In contrast export sales in 1952 were only six times higher than their prewar level.

The foregoing data are expressed in tabular form below:

	Average Annual Sales Value (1935-39 = 100)	
	1946-52	1952
U. S. Imports	455	1210
U. S. Exports	490	630
U. S. Manufacturers' Total Sales	660	900

(Details in Sections I and II)

3. The rate of increase of imports of electrical equipment reflects the rehabilitation of foreign industry and its approach toward a surplus position.

The rate of increase in imports has accelerated significantly in more recent years, as compared with a slowing down in the growth of exports.

This divergence in trends became far more marked in 1953, as is shown by the following table:

	First Half of 1953 Over First Half of 1952 Per cent Increase
U. S. Imports	50
U. S. Exports	9

Excluding Canada, exports for the first six months of 1953 were 7 per cent below those of the first six months of 1952.
(Sections I and II)

4. Competition from foreign countries for third markets has also grown much keener, especially during the past two years, and is now threatening further inroads upon United States exports of electrical equipment, particularly in South America.

For example, a comparison of European and U. S. price quotations of heavy electrical equipment, publicly opened within the past 18 months in Latin American and Asian countries, shows that of 124 different quotations 80 per cent were less than the United States bid.
(Section IV, Exhibits B, C, D.)

5. Foreign manufacturers of electrical products have very large labor cost advantages over United States competitors. These advantages are greater now than ever before.

a. In 1952 total monetary hourly wages and wage supplements (converted into United States dollars at official exchange rates) of the nine nations covered by the survey ranged between only 10 per cent of United States wages (and supplements) in Japan to 33.0 per cent in Belgium and Sweden. In 1938, the range was from 7.3 per cent in Japan to 46.6 in Germany.

Wage supplements have now become a significant factor in any wage comparisons among nations. For example, in France and Italy such supplements exceed one-third of the cash wages of their workers.

The wage ranges for 1938 and 1952 in the nine countries were as follows:

	1952	1938
United States	100.0	100.0
Belgium	33.0	34.5
Sweden	33.0	44.1
France	30.9	43.3
United Kingdom	28.0	37.0
Switzerland	23.8	33.9
Germany	22.0	46.6
Netherlands	20.7	41.0
Italy	19.6	22.7
Japan	9.9	7.3

The wage differentials between the United States and these nine countries have widened substantially in the postwar years. Only Japan, of the nine countries, has increased its wage rates relative to the United States since 1938. Germany, as shown by the above table, has moved from her prewar position of the highest wage country among the nine nations to the fourth lowest in 1952.

b. By 1952 industrial production in seven of the nine countries had recovered to levels which were 33-1/3 per cent or more above their 1938 levels. Japan was only 1 per cent above her 1938 level.

West Germany's production in 1952 was 44 per cent higher than in 1936, while her production of electrical machinery and equipment was 188 per cent above 1936, but a substantial portion of these gains has been the result of transfers of industrial capacity from East to West Germany rather than overall increases in West German production.

c. The legal work week (before overtime payments become due) ranges between 44 and 48 hours in most European countries. Overtime payments are not generally more than 25 per cent above regular wages.

d. During the postwar period, labor costs as a percentage of production value have decreased considerably more in the various foreign countries than they have in the United States. Three of the four countries for which comparison with a prewar year is possible also show a much steeper decline for that period than does the U. S. The reason for the more rapid postwar decrease in labor costs abroad is a combination of increases in productivity, which was very low at the beginning of the postwar period, and in value of production both rising considerably faster than wage rates (including wage supplements). In the U. S., on the other hand, money wages and wage supplements approximately kept pace with increases in productivity and in value of output. These factors are mainly responsible for the increased disparity in labor costs between the United States and the various European countries.

e. Statistical limitations make it impossible accurately to compare the output per man hour between particular industries of various

nations. However, it is both proper and possible to compare trends in productivity of particular industries of various countries, since substantiating data are available for certain nations over certain periods.

The following table shows changes in productivity of the electrical manufacturing industries in six nations over certain years for which comparable data are available.

	Output per Man Hour	
Country	Base Year = 100	1952 Level
United States	1939	154
Germany	1936	117
France	1938	126
Belgium	1947	130
Holland	1939	123 (for 1950)
Japan	1948	187 (for 1951)

Qualified representatives of a U. S. manufacturer of electrical equipment recently made a study of prevailing labor rates and general efficiency in the use of labor and materials in that industry in seven foreign countries. This study concluded that labor costs of various electrical products in the countries ranged between 20 and 78 per cent of U. S. labor costs of the same products. In Germany, where there is a combination of low wage rates, a high work week, and efficiency of both labor and equipment, labor costs excluding relatively moderate supplements in the industry are shown to be only about one-third of U S. labor costs.

(Details in Section IV)

6. Foreign exporters almost universally enjoy the benefits of many and varied kinds of both domestic and export subsidies, as well as a rather wide variety of other types of aid from their government. United States industrial producers enjoy much less assistance of this sort.

(Details in Section V)

7. Postwar conditions have led to the establishment (or intensification where they already existed) of numerous import restrictions and exchange controls abroad. Many of these restraints on international trade are far more effective barriers to its expansion than are protective tariffs. Most such restraints are not practiced by the U. S. government and, where practiced, are not generally applied to the electrical equipment industry.

Since dollars in the postwar years have been, and still are, scarce in most foreign countries, such restrictions have fallen more heavily on goods offered abroad for dollars and upon U. S. exporters selling for dollars than upon foreign exporters who can sell for their "soft" (non-dollar) currencies. There has been a very considerable relaxation of many such controls and restrictions, as they apply to other currencies but relatively little as they apply to the U. S. dollar.

(Details in Section VI)

8. Substantial losses of foreign investment income and smaller profits from various services since World War II have tended in the postwar years to create heavily adverse balance-of-payment positions among European countries and Japan, particularly with respect to the United States. This state of affairs, due primarily to lack of multilateral convertibility of most foreign currencies, and the need for goods often available only in the United States, has led to "dollar drives" and other efforts by foreign governments to subsidize and otherwise stimulate their exports to the United States.

(Details in Section III)

9. There has been a dramatic improvement, however, in almost all foreign countries over the last year and a half toward balancing off their respective dollar sales with their dollar purchases. Figures for France for 1952 were not available in time for inclusion in the report. Except for Italy and France all other seven countries (covered in the survey), whose payment balances have been causes of concern, show substantial credit balances in their current accounts for 1952 and to date in 1953.

If the "dollar gap" be defined as the excess of the dollar value of U. S. exports of goods and services over U. S. imports of goods and services, then the gap has vanished, at least for the time being. During the year ended June 30, 1953, U. S. imports for the first time since prewar days substantially exceeded U. S. exports for which we were paid. The United States has been called upon in this twelve-month period to settle these adverse accounts by deliveries of gold bullion and transfers of U. S. (dollar) bank balances and federal government bonds or other obligations.

Foreign nations nonetheless, during this twelve-month period, received economic and military aid from the U. S. in larger sums than during any previous twelve-month period since the war.

This general reversal of the world's balance-of-payment position with the United States was even more remarkable during the first half of 1953, when U. S. gold, bank balances, and government securities - earned net by other nations - would have more than paid for all economic aid extended by the U. S. in the period.

(Details in Section III)

10. Qualified opinion differs as to the probable durability of this dramatic change, but there is substantial support for the view that this improvement in balance-of-payment positions now rests on more solid foundations than did a similar improvement in 1950, after which conditions were rendered highly abnormal by the outbreak of war in Korea.

(Details in Section III)

11. To a major degree the postwar progress abroad has been due to U. S. aid, but full credit should be given to those nations which have adopted policies that have been successful in ending inflation, expanding production, and reducing restraints on domestic and foreign trade.

Germany is now outstripping all others in return to normal peacetime operations, despite loss of East Germany.

Replacement of bombed-out and dismantled machinery and equipment in Germany and Japan has given these countries more technologically efficient industrial plants than they had prewar. Because of their more efficient industrial plants, trade taking the place of aid might well benefit Germany more than any of our World War II Allies. However, both Germany and Japan must expand their exports outside the Iron Curtain or they will be forced to do so inside that Curtain to support normal employment and feed their peoples.

(Details in Section III)

12. In all foreign countries, duties on imports produce much larger percentages of their respective total revenues than they do in the United States, where customs duties produce approximately one per cent of total federal revenues, compared with sharply higher percentages of total revenues produced by import duties in most foreign nations. In 1951 the combined individual and corporate income taxes produced 71 per cent of total federal revenues in the United States, while abroad no nation collected more than 49 per cent and the majority collected not more than 35 per cent on an average from their income taxes - France only 25.6%; West Germany, 23.3%; Italy, 11.9%; Switzerland, 31.0%; and the United Kingdom, 49.0%. All national, state and local government receipts in the United States (mostly taxes arising directly or indirectly from the domestic operation of the economy) come to about 26% of gross national product.

Foreign nations, therefore, make up this difference in income tax receipts primarily from general sales taxes or excises which importers into these countries must absorb in addition to their own income tax costs. The general sales tax ranges from 26.4 per cent in France to 7.3 per cent in the United Kingdom.

Consequently, foreign competitors selling into the U. S. or third markets have sharply lower tax costs than American competitors selling into their own or foreign markets.

(Details in Section VII)

13. In summing up:

a. The wage differentials in postwar years between U. S. electrical equipment manufacturers and their foreign competitors have broadened compared to prewar years.

b. Domestic and export subsidies and aids by foreign nations exceed those enjoyed by their U. S. competitors. In the postwar years, the differentials in this respect have substantially increased.

c. There has been an increase in the number, and intensification in the use, of various types of exchange controls and other restraints on foreign trade since World War II which discriminate against the United States.

d. The so-called dollar gap in foreign balance-of-payment-positions has disappeared in the last 18 months. It has been replaced by a dollar surplus.

e. Because of Germany's more efficient industrial plants, trade taking the place of aid might well benefit Germany more than our World War II Allies.

f. Foreign competitors selling into their own, U. S., or third markets have sharply lower tax costs than U. S. manufacturers selling in their own or any foreign market.

November, 1953

Section I

United States imports of electrical products from principal countries in Western Europe and Japan, prewar and postwar.

SECTION I

Summary

Imports of electrical machinery and equipment are small relative to both U. S. domestic production and U. S. exports of this equipment. For the postwar years, they have averaged 4.6 times higher than their prewar level.

In the last two years, however, imports of electrical machinery and equipment have been increasing rapidly, doubling in value in 1951, and increasing an additional 45% in 1952. For the first six months of 1953, they were 50% higher than the same period of 1952.

Although imports from Canada are today the largest of any country, the eight European countries and Japan are showing an increase of 116% in the first six months of 1953 over the same period for 1952, compared to only 7% for Canada.

Japan, which prewar accounted for 40% of the imports of electrical equipment, has not yet recovered to its prewar level. In 1951-52, it represented only 4.5% of the total.

SECTION I

The following two sections contain value data on the imports and exports of electrical manufactures from the United States. In the immediately succeeding section imports into the United States of electrical machinery from the principal Western European nations and Japan for 1935-39, 1946-52 are shown. Although these nations shipped us over 96% of our total electric imports in 1939, they account for only about 50% of total electrical imports in 1952, Canada emerging as the supplier of about 47% of the remainder.

The table of U. S. Imports of Electrical Machinery, etc. compared with all imports for consumption, points up the fact that the former have remained in a fairly constant relationship to the latter. Were it not for the growing importance of Canada as a supplier (mentioned above), our imports of electrical products would still constitute nearly the same percentage of all imports (roughly 0.12%) that they did in 1938.

Since the heading "Special Machinery," which is shown with other types of electrical products on all detailed import tables, includes such items as "Cigarette making," and "Candy wrapping machinery," it might well be argued that the entire group should not be shown on a table of imports of electrical products. However, it was decided to show this group together with other electrical imports in view of the fact that the Census Bureau publication, Schedule A, Classification of U. S. Commodity Imports does include it under the general title of "Electrical Machinery and Apparatus." Secondly, the Census Bureau's foreign trade statistical annual, "Foreign Commerce and Navigation of the United States," declares that this class of imports is made up of "Machines having as an essential feature an electrical element or device, n.e.s." (A similar policy of showing every item listed as "electrical" by the Census Bureau was followed on the export tables.) For the convenience of those who believe that figures for total U. S. imports of electrical products would be more meaningful without the "Special Machinery" group, the summary table of U. S. imports shows totals both including and excluding this group. In the postwar years, we observe that "Special Machinery" has grown in importance relative to other types of electrical machinery. On the average, it constituted 35.5% of our electrical imports from the Western European Nations and Japan, while it only accounted for 10.1% in the prewar years.

In 1952, the United Kingdom was far out in front as our largest supplier of electrical products among the countries under study. Even excluding "Special Machinery," the United Kingdom shipped to us about $2.8 million of electrical machinery, or about two and a half times as much as her nearest tival, Belgium-Luxemburg, with $1.1 million. When including "Special Machinery," we find the United Kingdom even farther in the lead, with $5.6 million as against $1.8 million for Belgium-Luxemburg. In fact, the United Kingdom has remained in the lead for all postwar years with the exception of 1948, in which year our unusually large imports of light bulbs from Japan made that country our main supplier of electrical products. Japan also held this position, and for the same reason, throughout the years 1935-9. In 1939 Japan shipped us $808.6 thousand of electrical goods; Germany and the United Kingdom followed with $584.6 thousand and $202.7 thousand respectively.

U. S. IMPORTS OF ELECTRICAL MACHINERY AND APPARATUS, TURBINES AND PARTS, AND TOTAL U. S. IMPORTS FOR CONSUMPTION, 1935-39, 1946-52

(thousands of dollars)

	U. S. Imports for Consumption	
	Electrical Machinery and Apparatus, and Turbines	All Merchandise
1935	2,202	2,038,905
1936	2,453	2,423,977
1937	2,412	3,009,852
1938	2,149	1,949,624
1939	2,091	2,276,099
1946	3,537	4,824,902
1947	3,537	5,666,321
1948	5,413	7,092,032
1949	4,394	6,591,640
1950	9,499	8,743,082
1951	18,823	10,817,341
1952	27,372	10,746,900

Source: Bureau of the Census

ELECTRICAL MACHINERY INDUSTRY TOTAL SALES, AND U. S. DOMESTIC EXPORTS AND IMPORTS FOR CONSUMPTION OF ELECTRICAL MACHINERY AND APPARATUS - COMPARISON OF RECENT TRENDS

(millions of dollars)

	Total Sales	U. S. Domestic Exports	U. S. Imports for Consumption
1935-39 average	1,582	97.9	2.3
1946-50 average	8,369	445.2	5.3
1951	12,170	536.6	18.8
1952	13,740	616.4	27.4
1953	16,098(1)	334.5(2)	20.8(2)

(1) Forecast
(2) Figure is for first six months of 1953

Source: Bureau of Census

It is apparent from the table of index numbers that imports from the United Kingdom, although more than those from any other country, did not grow as fast as those from several other countries, notably Belgium and Italy. If 1948, the first year in which the war-ravaged European national economies made any substantial recovery, is taken as a base, then we see that 1952 imports from Germany, although less than one-third the value of those from the United Kingdom, had grown about 20 times since 1948, while imports from the United Kingdom increased less than 5 times over the same period. Again with 1948 as a base, imports from Belgium increased in value more than 13 times, imports from Italy nearly 12, while those from other European nations grew at a pace similar to the United Kingdom one.

The summary import charts in Section I reveal that U.S. imports of certain of the broad groups reached a decided peak, generally in 1951. Belgium, West Germany, Sweden, Italy, and Japan show such peaks for "Electrical Apparatus." United Kingdom, Belgium, Netherlands, France, Italy and Japan exhibit similar peaks for "Signal and Communications Devices." The chart on imports from Switzerland shows a very marked peak for "Turbines." These peaks are due to large increases in the imports of one item within the group and this item is not necessarily the same from country to country. In the case of "Electrical Apparatus," more than 90% of the 1951 Belgian peak is caused by a quadrupling of imports of "Motors" over 1950, while a large part of the Swedish peak comes from an eightfold increase in the imports of "Batteries" from that country over the preceding year. When looking at "Signal and Communications Devices," we find that the 1951 peak is caused more often than not by steep rises in the imports of "Radio Apparatus," but in Belgium and, to some extent, the United Kingdom, the explanation lies rather in the imports of "Telephone Apparatus." The wave of stockpiling in the United States after the onset of the Korean War in 1950 would appear to be major reason for the import peaks established in 1951, the time lag being due to delay in the filling and shipping of the unusual volume of American orders in the countries of origin.

The commodity groupings used in prewar tables are chiefly those which are found in the 1939 edition of "Foreign Commerce and Navigation of the United States," of which the 1946 edition is the most recent. After 1946, although an important change took place in the commodity code system, no attempt is made in the statistical annuals to group the various types of electrical products. Therefore, the postwar commodity groupings were arranged in a form as similar as possible to the prewar ones with the aid of the latest editions of two Census Bureau publications: Schedule A., (already referred to above) and Schedule B. Classification of U.S. Commodity Exports. In other words, although postwar commodity code numbers are different from prewar, the content of both prewar and postwar import commodity groupings is approximately the same. This applies equally well to prewar and postwar export groupings. For easy reference, the specific code numbers of the Bureau of the Census follow each electrical machinery grouping in the tables.

The data as contained in the two sections do not appear in their present form anywhere else. That is, although figures for the exports and imports of individual electric items were most certainly available for all years under consideration, these figures had never been worked up on an industry-wide basis: selected countries of origin by main commodity groups for imports; for the export side, geographic areas of destination by main

commodity groups on the one hand, and total exports to the principal countries of the world on the other. Personal inquiries were made to the Division of Foreign Trade Statistics of the Bureau of the Census and of the International Economic Analysis Division of the Department of Commerce in Washington as well as the Statistical Office of the United Nations in New York. All of these organizations replied that they neither prepare the figures in the desired form themselves nor know of any organization which does so. The Bureau of the Census added that they were willing to undertake the job, but due to lack of facilities would not be able to finish it before next February. Therefore, the compilation of the tables was undertaken by The Conference Board, since it was felt that the data would be of sufficient value to warrant the time and effort needed to compile them.

For additional comments with regard to the export tables, see Section II.

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM SELECTED WESTERN EUROPEAN COUNTRIES AND JAPAN, 1935-39, 1946-52

$000

		United Kingdom	Belgium-Luxemburg	West Germany	Netherlands	Switzerland	Sweden	France	Italy	Japan	Total	B as % of A
1935:	A	195.5	2.9	380.7	157.9	84.4	172.9	85.0	4.7	1,046.7	2,130.7	99.2
	B	195.0	2.9	369.7	157.9	79.4	172.9	85.0	4.7	1,046.7	2,114.2	
1936:	A	323.0	12.2	539.2	81.4	95.2	56.2	127.0	1.1	1,171.0	2,406.3	90.0
	B	270.6	11.5	374.2	80.3	87.5	39.4	115.9	1.1	1,168.8	2,149.3	
1937:	A	341.4	20.7	505.1	146.7	41.1	74.0	111.7	7.1	1,039.3	2,287.1	88.3
	B	298.7	20.4	347.7	134.0	37.1	44.6	92.9	4.6	1,038.7	2,018.7	
1938:	A	408.9	25.9	461.5	225.1	123.3	71.3	222.1	0.8	532.5	2,071.4	82.2
	B	227.5	24.6	323.3	224.0	120.7	50.4	199.7	0.8	531.6	1,702.6	
1939:	A	202.7	48.3	584.6	82.8	101.6	36.2	146.8	2.5	808.6	2,014.1	89.7
	B	90.7	48.1	506.9	82.8	99.6	29.0	140.7	1.3	807.2	1,806.3	
1946:	A	951.9	25.6	1.2	91.4	137.9	24.9	71.6	1.2	30.1	1,335.8	48.8
	B	357.5	24.6	1.0	91.0	82.7	16.9	47.4	1.2	30.1	652.4	
1947:	A	862.9	95.2	11.4	191.8	89.1	68.5	86.5	10.7	123.2	1,539.3	66.0
	B	385.9	92.4	11.4	185.6	86.7	44.9	75.8	9.5	123.2	1,015.4	
1948:	A	1,210.7	133.3	79.6	349.3	183.8	166.7	111.7	27.7	1,922.0	4,184.8	80.4
	B	696.5	126.4	6.5	334.0	121.9	93.8	51.8	13.0	1,922.0	3,365.9	
1949:	A	1,009.7	286.4	103.0	625.4	260.3	271.0	87.7	20.9	424.4	3,088.8	54.8
	B	579.4	286.4	57.8	586.2	143.2	172.1	18.7	14.4	419.8	1,691.8	

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM SELECTED WESTERN EUROPEAN COUNTRIES AND JAPAN, 1935-39, 1946-52 (Continued)

$000

		United Kingdom	Belgium-Luxemburg	West Germany	Netherlands	Switzerland	Sweden	France	Italy	Japan	Total	B as % of A
1950:	A	2,577.9	471.7	595.4	645.4	381.2	509.5	346.0	26.8	401.7	5,955.6	75.8
	B	1,843.6	435.2	514.2	584.8	157.4	280.9	299.8	15.3	394.2	4,515.4	
1951:	A	4,140.2	1,678.1	1,356.4	523.5	1,478.2	827.5	1,699.4	203.3	785.2	12,691.8	80.5
	B	3,030.0	1,581.8	1,065.2	451.2	1,134.8	555.3	1,514.6	112.8	769.6	10,215.3	
1952:	A	5,573.2	1,755.7	1,611.6	1,319.7	1,296.7	839.3	342.7	323.7	645.1	13,707.7	52.1
	B	2,872.6	1,077.6	670.8	656.7	675.1	353.2	212.6	37.8	585.1	7,141.5	

A = Includes "Special Machinery"
B = Excludes "Special Machinery"

Source: Bureau of the Census

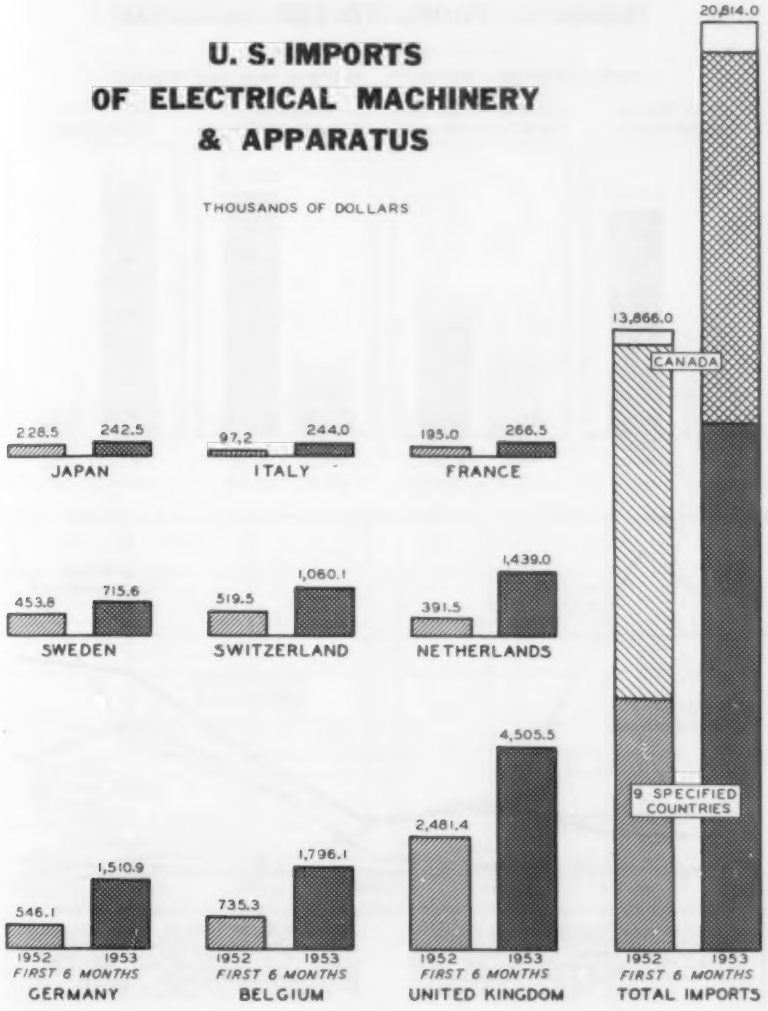
INDEX NUMBERS OF THE VALUE OF U. S. IMPORTS FROM SELECTED WESTERN EUROPEAN NATIONS AND JAPAN, 1935-39, 1946-52

(1935-39=100)

	United Kingdom	Belgium-Luxembourg	West Germany	Netherlands	Switzerland	Sweden	France	Italy	Japan	Total
1935	66.4	13.2	77.0	113.8	94.7	210.5	61.4	145.1	113.8	97.7
1936	109.8	55.5	109.1	58.7	106.8	68.4	91.7	33.9	127.3	110.3
1937	116.0	94.1	102.2	105.7	46.1	90.1	80.6	219.1	113.0	104.8
1938	138.9	117.7	93.4	162.2	138.4	86.8	160.4	24.7	57.9	94.9
1939	68.9	219.5	118.3	59.7	114.0	44.0	106.0	77.2	87.9	92.3
1946	323.4	116.4	.0.002	65.9	154.7	30.3	51.7	37.0	0.33	61.2
1947	293.2	432.7	0.023	138.2	100.0	83.4	62.4	330.2	13.4	70.5
1948	411.4	605.9	16.1	251.7	216.2	203.0	80.6	854.9	209.0	191.8
1949	343.1	1,301.8	20.8	450.6	292.1	330.0	63.3	645.1	46.1	141.6
1950	875.9	2,144.0	120.5	465.1	427.7	620.4	249.8	827.2	43.7	272.9
1951	1,406.8	7,627.7	274.5	377.2	1,658.7	1,007.7	122.7	6,274.7	85.4	581.7
1952	1,893.1	7,980.4	326.1	950.9	1,455.0	1,022.0	247.4	9,990.7	70.1	628.2

N.B. Includes "Special Machinery" imports.

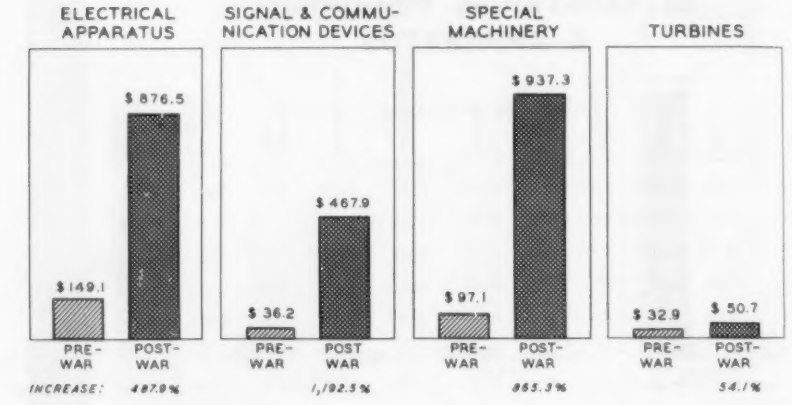
Source: Bureau of the Census

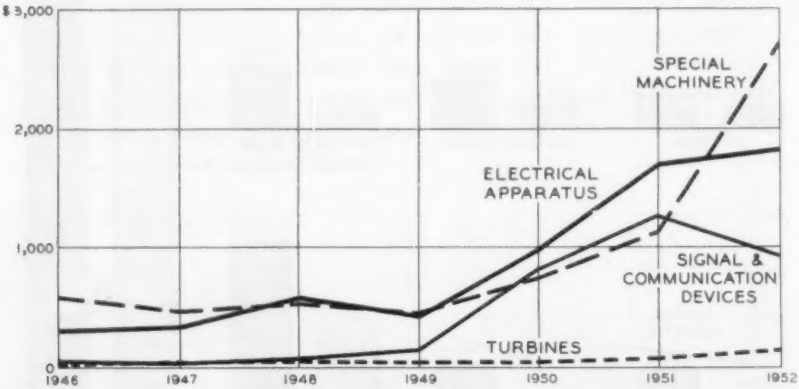

U. S. IMPORTS
OF ELECTRICAL MACHINERY
& APPARATUS
THOUSANDS OF DOLLARS
228.5
242.5
JAPAN
97.2
244.0
ITALY
195.0
266.5
FRANCE
453.8
715.6
SWEDEN
519.5
1,060.1
SWITZERLAND
391.5
1,439.0
NETHERLANDS
546.1
1,510.9
1952
1953
FIRST 6 MONTHS
GERMANY
735.3
1,796.1
1952
1953
FIRST 6 MONTHS
BELGIUM
2,481.4
4,505.5
1952
1953
FIRST 6 MONTHS
UNITED KINGDOM
13,866.0
20,814.0
CANADA
9 SPECIFIED COUNTRIES
1952
1953
FIRST 6 MONTHS
TOTAL IMPORTS

IMPORTS FROM UNITED KINGDOM

DOLLAR FIGURES IN THOUSANDS

PREWAR: 1936 - 1939 AVERAGE POSTWAR: 1946 - 1952 AVERAGE



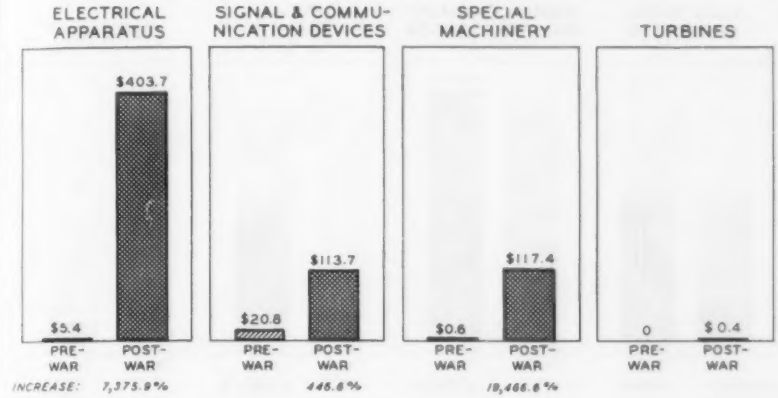


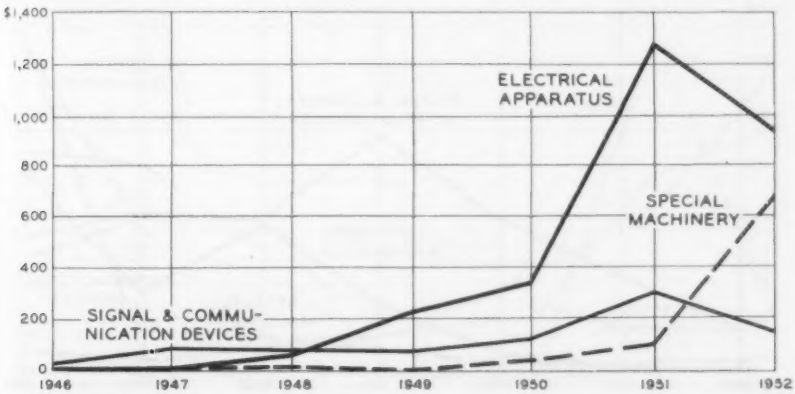
Electrical Apparatus: Generators, batteries, transformers and converters, switches and sockets, motors, lamps, laundry equipment, cooking stoves, industrial heating equipment, X-ray and therapeutic apparatus, vacuum cleaners, household utensils, and other items bearing the following Schedule A code numbers: 709.45-709.49, 709.75, 709.82, 709.98-709.99. **Special Machinery:** Strength testing apparatus, cigarette making machinery, candy wrapping machinery, and other types bearing Schedule A code numbers 7100.8, 7100.0, 7100.9 in 1939. For details, see text of Section #1.
Price increase prewar-postwar roughly 75%.

IMPORTS FROM BELGIUM

DOLLAR FIGURES IN THOUSANDS

PREWAR: 1936-1939 AVERAGE POSTWAR: 1946-1952 AVERAGE



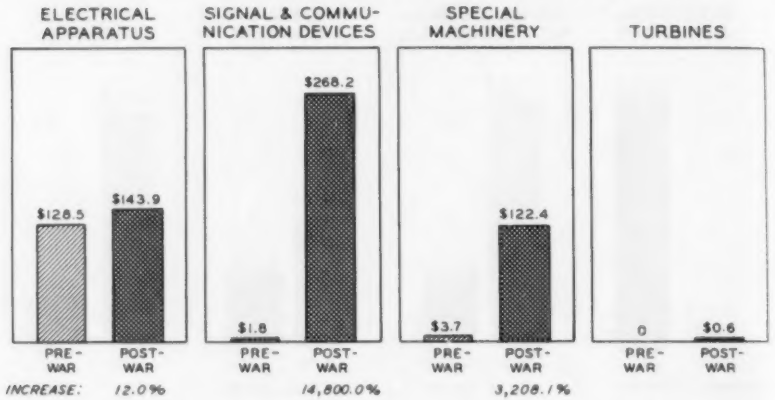


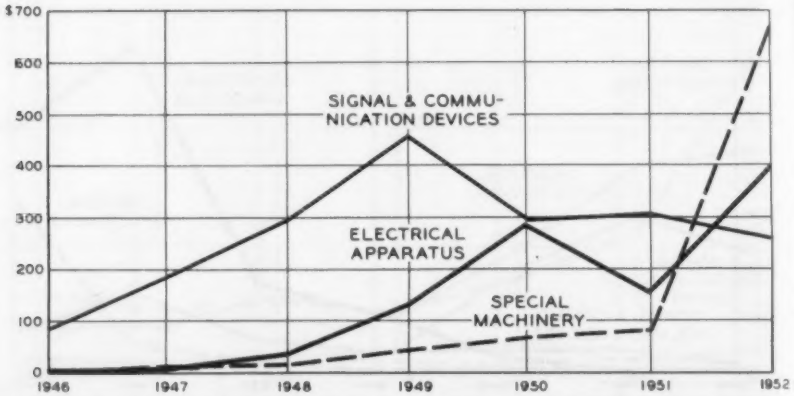
Electrical Apparatus: Generators, batteries, transformers and converters, switches and sockets, motors, lamps, laundry equipment, cooking stoves, industrial heating equipment, X-ray and therapeutic apparatus, vacuum cleaners, household utensils, and other items bearing the following Schedule A code numbers: 709.45-709.49, 709.75, 709.82, 709.98-709.99. **Special Machinery:** Strength testing apparatus, cigarette making machinery, candy wrapping machinery, and other types bearing Schedule A code numbers 7100.8, 7100.0, 7100.9 in 1939. For details, see text of Section # 1.
Price increase prewar-postwar roughly 75%.

IMPORTS FROM NETHERLANDS

DOLLAR FIGURES IN THOUSANDS

PREWAR: 1936–1939 AVERAGE POSTWAR: 1946–1952 AVERAGE



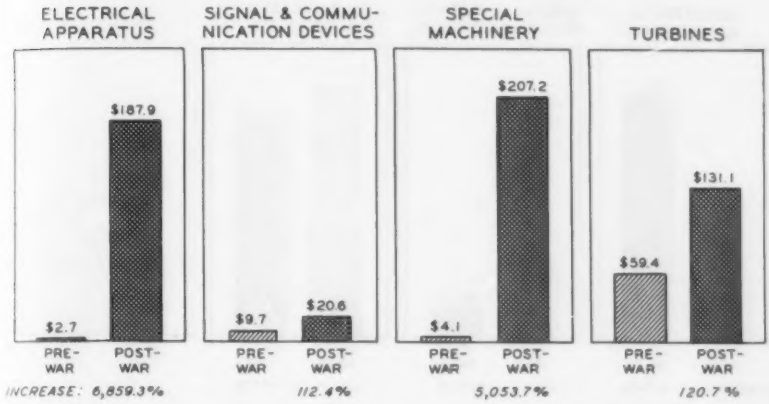


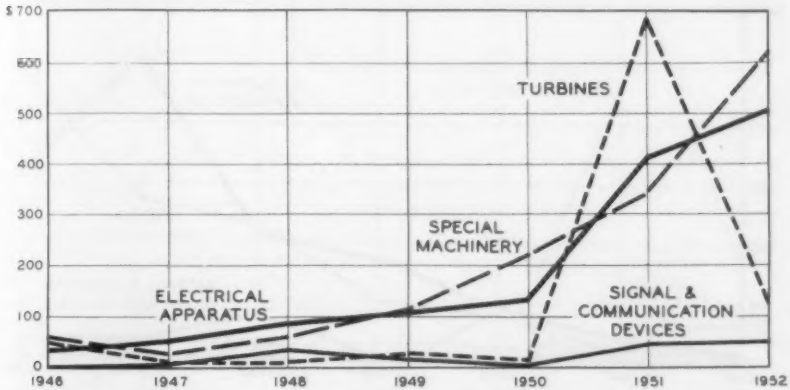
Electrical Apparatus: Generators, batteries, transformers and converters, switches and sockets, motors, lamps, laundry equipment, cooking stoves, industrial heating equipment, X-ray and therapeutic apparatus, vacuum cleaners, household utensils, and other items bearing the following Schedule A code numbers: 709.45-709.49, 709.75, 709.82, 709.98-709.99. Special Machinery: Strength testing apparatus, cigarette making machinery, candy wrapping machinery, and other types bearing Schedule A code numbers: 7100.8, 7100.0, 7100.9 in 1939. For details, see text of Section #1. Price increase prewar-postwar roughly 75%.

IMPORTS FROM SWITZERLAND

DOLLAR FIGURES IN THOUSANDS

PREWAR: 1936-1939 AVERAGE POSTWAR: 1946-1952 AVERAGE



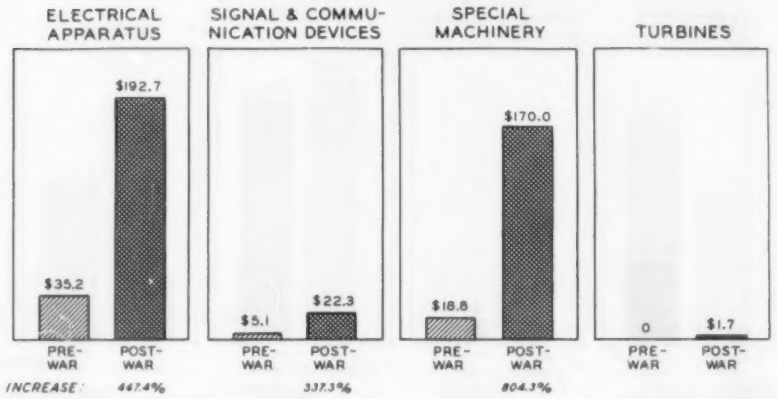


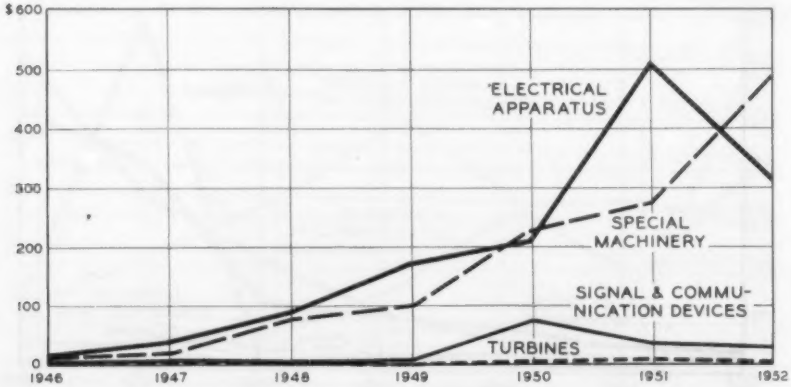
Electrical Apparatus: Generators, batteries, transformers and converters, switches and sockets, motors, lamps, laundry equipment, cooking stoves, industrial heating equipment, X-ray and therapeutic apparatus, vacuum cleaners, household utensils, and other items bearing the following Schedule A code numbers: 709.45-709.49, 709.75, 709.82, 709.98-709.99. Special Machinery: Strength testing apparatus, cigarette making machinery, candy wrapping machinery, and other types bearing Schedule A code numbers 7108.8, 7108.0, 7108.9 in 1939. For details, see text of Section 9 I.
Price increase prewar-postwar roughly 75%.

IMPORTS FROM SWEDEN

DOLLAR FIGURES IN THOUSANDS

PREWAR: 1936-1939 AVERAGE POSTWAR: 1946-1952 AVERAGE



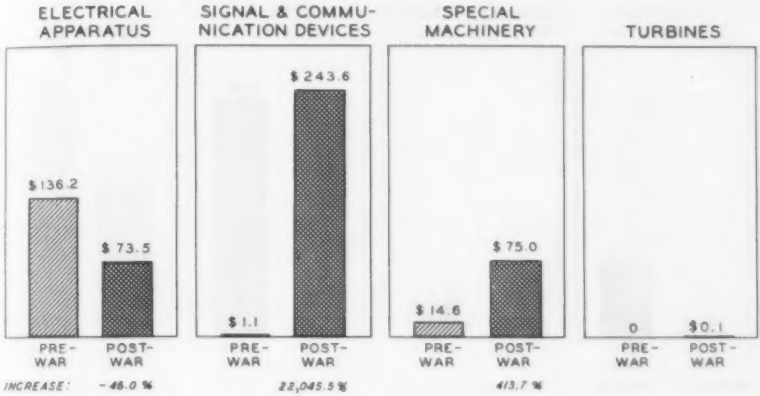


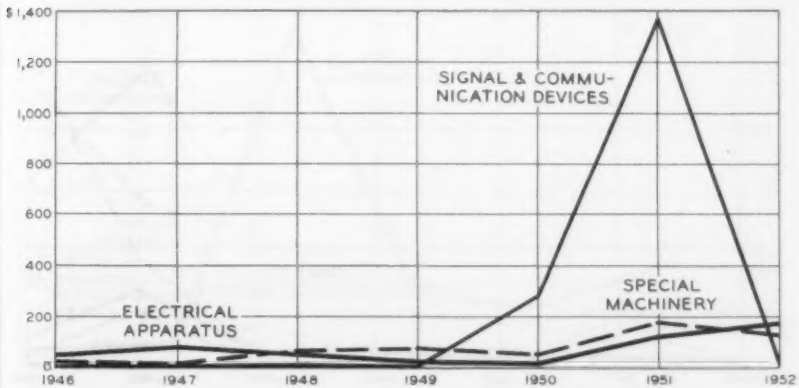
Electrical Apparatus: Generators, batteries, transformers and converters, switches and sockets, motors, lamps, laundry equipment, cooking stoves, industrial heating equipment, X-ray and therapeutic apparatus, vacuum cleaners, household utensils, and other items bearing the following Schedule A code numbers: 709.45-709.49, 709.75, 709.82, 709.98-709.99. Special Machinery: Strength testing apparatus, cigarette making machinery, candy wrapping machinery, and other types bearing Schedule A code numbers 7100.8, 7100.0, 7100.9 in 1939. For details, see text of Section #1.
Price increase prewar-postwar roughly 75%.

IMPORTS FROM FRANCE

DOLLAR FIGURES IN THOUSANDS

PREWAR: 1936 – 1939 AVERAGE POSTWAR: 1946 – 1952 AVERAGE



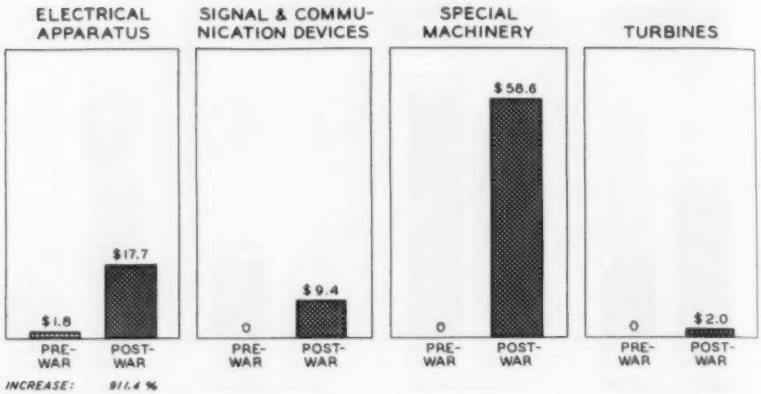


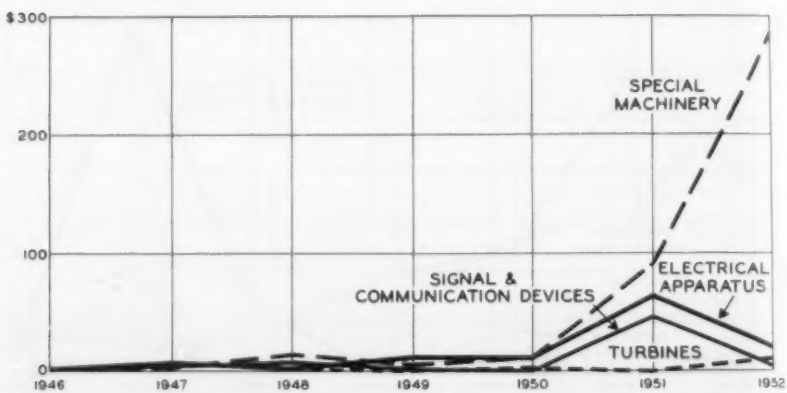
Electrical Apparatus: Generators, batteries, transformers and converters, switches and sockets, motors, lamps, laundry equipment, cooking stoves, industrial heating equipment, X-ray and therapeutic apparatus, vacuum cleaners, household utensils, and other items bearing the following Schedule A code numbers: 709.45-709.49, 709.75, 709.82, 709.98-709.99. **Special Machinery:** Strength testing apparatus, cigarette making machinery, candy wrapping machinery, and other types bearing Schedule A code numbers 7100.8, 7100.0, 7100.9 in 1939. For details, see text of Section 11.
Price increase prewar-postwar roughly 75%.

IMPORTS FROM ITALY

DOLLAR FIGURES IN THOUSANDS

PREWAR: 1936–1939 AVERAGE POSTWAR: 1946–1952 AVERAGE



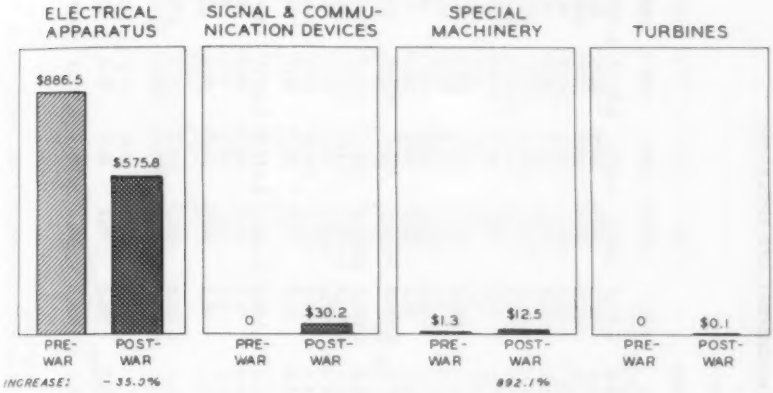


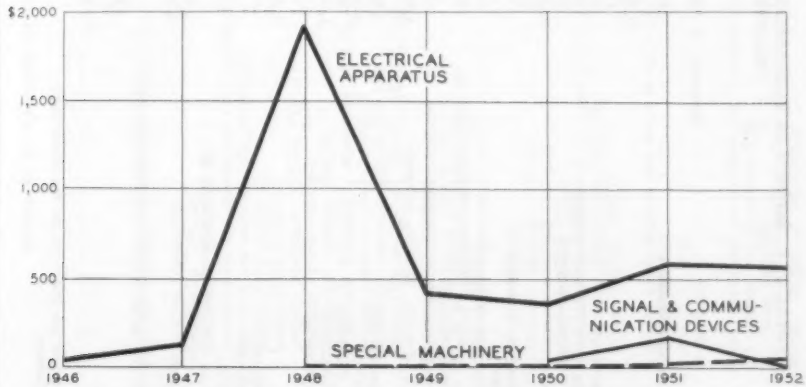
Electrical Apparatus: Generators, batteries, transformers and converters, switches and sockets, motors, lamps, laundry equipment, cooking stoves, industrial heating equipment, X-ray and therapeutic apparatus, vacuum cleaners, household utensils, and other items bearing the following Schedule A code numbers: 709.45-709.49, 709.75, 709.82, 709.98-709.99. Special Machinery: Strength testing apparatus, cigarette making machinery, candy wrapping machinery, and other types bearing Schedule A code numbers 7100.8, 7100.0, 7100.9 in 1939. For details, see text of Section #1.
Price increase prewar-postwar roughly 75%.

IMPORTS FROM JAPAN

DOLLAR FIGURES IN THOUSANDS

PREWAR: 1936-1939 AVERAGE POSTWAR: 1946-1952 AVERAGE





Electrical Apparatus: Generators, batteries, transformers and converters, switches and sockets, motors, lamps, laundry equipment, cooking stoves, industrial heating equipment, X-ray and therapeutic apparatus, vacuum cleaners, household utensils, and other items bearing the following Schedule A code numbers: 709.45-709.49, 709.75, 709.82, 709.98-709.99. Special Machinery: Strength testing apparatus, cigarette making machinery, candy wrapping machinery, and other types bearing Schedule A code numbers 7100.8, 7100.0, 7100.9 in 1939. For details, see text of Section #1. Price increase prewar-postwar roughly 75%.

TOTAL U. S. IMPORTS OF ELECTRICAL MACHINERY AND APPARATUS
1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	9,308.2	7,329.9	3,647.1	2,283.1	3,519.8	1,987.9	1,187.0
Generators (7090000)	330.3	399.1	92.5	65.6	49.3	92.3	78.3
Batteries (7090800-7090810)	145.6	251.4	37.0	22.9	21.1	108.0	34.3
Transformers and converters (7090010-7090020)	565.1	278.5	183.4	97.0	165.3	62.6	27.1
Switches and sockets (7090300-7090330)	490.2	171.0	83.9	84.5	56.9	75.2	51.8
Motors (7090400-7090430)	2,527.4	2,334.1	810.7	672.4	202.9	422.0	88.1
Lamps (7063000-7067000)	591.9	597.3	371.3	439.2	1,987.0	163.4	141.9
Laundry equipment (7090580, 7100700)	85.3	59.9	71.6	24.3	318.6	485.8	11.7
Cooking stoves (7090850)	13.1	9.7	7.0	3.0	1.9	31.1	1.4
Industrial heating (7090890, 7100200)	276.6	642.0	292.1	177.2	89.7	151.8	28.8
X-Ray and therapeutic apparatus (7090600, 7090700-7090710)	626.0	322.6	234.4	163.9	83.5	41.5	7.9
Vacuum cleaners (7069000-7069100)	71.1	158.4	233.9	44.9	68.6	24.3	141.8
Household utensils (7090510-7090560, 7090590)	23.5	72.4	16.0	8.5	15.8	9.4	23.6
Other (7090450-7090490, 7090750, 7090820, 7090990)	3,562.0	2,033.4	1,213.2	479.8	459.2	320.4	550.3
Signal and communication devices	7,851.8	6,502.2	3,654.8	922.0	747.6	536.5	1,040.4
Radio apparatus (7090660)	6,035.1	5,041.9	2,896.9	771.2	637.7	296.1	985.5
Television apparatus (7090680)	295.8	257.4	123.3	...	...	...	...
Telephone apparatus (7090690)	1,423.5	1,113.2	594.8	101.6	85.0	164.3	35.6
Telegraph apparatus (7090670)	97.4	70.8	39.8	49.2	24.9	76.2	19.2
Special machinery	9,976.4	4,199.3	2,140.6	1,117.3	1,079.1	963.1	1,252.8
Strength testing (7100100)	181.6	70.7	73.7	57.1	27.2	6.0	24.2
Cigarette making (7100400)	26.9	9.1	...	23.1	6.1	0.3	273.6
Candy wrapping (7100600)	3.6	28.6	22.2	51.8	31.4	44.9	118.1
Machinery that could be designed to work with or without electricity (7100800)	3,360.3	1,410.6	686.6	388.3	528.7	476.5	650.0
Other (7100300, 7100900)	6,404.0	2,680.2	1,358.2	597.0	485.7	435.4	186.7
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	306.3	791.3	56.1	72.1	70.2	49.5	57.4
Grand total	27,442.7	18,822.6	9,498.6	4,394.5	5,416.7	3,537.1	3,537.5

Note: Parts and accessories are included in the above data
Source: Bureau of the Census

TOTAL U. S. IMPORTS OF ELECTRICAL MACHINERY AND APPARATUS
1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	1,657.9	1,467.4	1,988.3	2,022.7	2,064.0
Generators (709.00)	46.4	4.2	0.7	25.8	15.7
Batteries (709.80-709.81)	2.2	8.6	8.1	9.1	17.3
Transformers and converters (709.01-709.02)	16.6	1.5	62.4	10.2	1.3
Switches and sockets (709.30-709.31)	26.1	44.8	50.5	64.5	37.0
Motors (709.40-709.43)	34.1	26.5	60.2	18.3	16.6
Lamps (7063.1-7067.0)	797.3	510.7	979.1	1,128.5	1,009.1
Laundry equipment (709.50, 7100.7)	0.5	0.2	1.5	1.5	0.1
Cooking stoves (709.85)	2.9	1.9	0.3	0.1	...
Industrial heating (709.89)	4.2	7.1	1.2	0.2	37.4
X-Ray and Therapeutic apparatus (709.60, 709.70-709.71)	85.2	180.6	201.4	182.4	204.2
Vacuum cleaners (7069.0-7069.1)	23.0	35.5	100.3	77.7	49.7
Household utensils (709.51-709.59)	a	a	a	0.1	a
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	619.5	645.9	522.5	504.4	675.5
Signal and communication devices	102.1	167.5	62.8	33.5	27.7
Radio apparatus (709.71-709.76)	48.3	62.1	33.8	17.1	20.5
Telephone apparatus (709.69)	50.6	101.9	27.2	13.3	3.2
Telegraph apparatus (709.67)	3.3	3.5	1.8	3.1	4.0
Special machinery	229.9	384.3	279.8	258.4	16.0
Strength testing (7100.1)	8.1	6.5	4.6	7.3	...
Cigarette making (7100.4)	0.2	...	...	...	...
Candy wrapping (7100.6)	5.2	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	43.7	...	...	...	...
Other (7100.0, 7100.9)	172.8	377.8	275.2	251.1	16.0
Turbines steam engines and water wheels (711.00-711.01, 711.04-711.05)	101.0	130.1	81.6	138.8	94.0
Grand total	2,091.0	2,149.2	2,412.4	2,453.4	2,201.6

Note: Parts and accessories are included in above data
(1) Schedule A in effect 1939
a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM CANADA (incl. Newfoundland and Labrador) 1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	3,547.0	1,778.5	854.2	647.4	641.0	1,303.7	599.2
Generators (7090000)	187.5	119.3	35.9	32.9	9.8	78.9	67.0
Batteries (7090800-7090810)	32.0	16.7	8.6	3.1	8.2	98.4	26.6
Transformers and converters (7090010-7090020)	244.8	34.7	38.7	42.3	70.0	15.0	23.6
Switches and sockets (7090300-7090330)	53.0	21.1	5.1	8.9	11.9	56.8	8.2
Motors (7090400-7090430)	790.5	495.8	383.4	383.0	112.9	385.8	63.6
Lamps (7063000-7067000)	1.4	5.0	1.5	11.3	48.7	17.9	10.8
Laundry equipment (7090580, 7100700)	12.4	15.4	6.6	2.0	313.4	482.1	10.9
Cooking stoves (7090850)	10.9	8.5	6.4	1.5	.7	30.4	1.4
Industrial heating (7090890, 7100200)	106.9	576.3	258.3	89.8	39.0	91.3	23.5
X-Ray and therapeutic apparatus (7090600, 7090700-7090710)	54.6	7.0	11.0	5.1	3.2	2.8	0.9
Vacuum cleaners (7069000-7069100)	0.5	1.3	0.7	1.2	0.8	1.1	2.2
Household utensils (7090510-7090560,7090590)	2.8	0.5	0.4	0.5	0.7	3.4	14.0
Other (7090450-7090490, 7090750, 7090820, 7090990)	2,049.7	476.9	97.6	65.9	21.8	39.8	146.5
Signal and communication devices	6,172.8	2,173.5	1,635.3	229.8	268.0	206.6	874.7
Radio apparatus (7090660)	5,088.8	1,471.5	1,154.0	216.0	260.7	85.6	869.9
Television apparatus (7090680)	4.5	2.3	45.0	...	...	...	...
Telephone apparatus (7090690)	1,075.4	698.9	429.1	12.0	3.5	60.0	4.0
Telegraph apparatus (7090670)	4.1	0.8	7.2	1.7	3.7	61.0	0.8
Special machinery	3,080.5	1,683.1	650.6	201.6	247.4	406.0	563.0
Strength testing (7100100)	116.4	...	1.6	a	1.6	...	3.5
Cigarette making (7100400)	0.2	...	...	...	...	...	...
Candy wrapping (7100600)	...	...	...	...	2.7	...	5.1
Machinery that could be designed to work with or without electricity (7100800)	391.4	348.1	219.5	97.2	105.2	266.3	527.7
Other (7100300, 7100900)	2,572.5	1,335.0	429.6	104.3	138.0	139.6	26.6
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	14.1	24.6	1.0	5.3	5.1	7.7	0.2
Grand total	12,814.4	5,659.7	3,141.0	1,084.0	1,161.5	1,923.9	2,037.0

Note: Parts and accessories are included in the above data
a Less than $50
Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM CANADA
1935-1939

Thousands of Dollars

Items and Schedule A Commodity Numbers(1)	1939	1938	1937	1936	1935
Electrical apparatus	20.1	18.9	31.4	15.4	28.0
Generators (709.00)	0.1	0.2	a	0.4	...
Batteries (709.80-709.81)	0.4	1.2	4.3	0.4	12.7
Transformers and converters (709.01-709.02)	1.7	0.8	1.6	2.0	0.9
Switches and sockets (709.30-709.31)	0.8	1.1	0.6	a	0.5
Motors (709.40-709.43)	4.5	1.3	1.0	1.7	0.9
Lamps (7063.1-7067.0)	0.2	0.1	0.1	0.2	0.2
Laundry equipment (709.50, 7100.7)	0.1	...	...	...	a
Cooking stoves (709.85)	2.5	1.8	0.1	0.1	...
Industrial heating (709.89)	0.6	...	...	...	...
X-Ray and therapeutic apparatus(709.60,709.70-709.71)	0.6	0.4	0.3	0.6	1.3
Vacuum cleaners (7069.0-7069.1)	1.3	2.8	7.8	2.3	2.0
Household utensils (709.51-709.59)	...	a	...	...	a
Other (709.45-709.49,709.75,709.82,709.98-709.99)	7.3	9.2	15.5	7.6	9.6
Signal and communication devices	6.0	4.0	2.2	1.5	1.1
Radio apparatus (709.71-709.76)	5.2	3.3	1.5	0.8	1.0
Telephone apparatus (709.69)	0.8	0.7	0.7	0.7	0.1
Telegraph apparatus (709.67)	...	...	...	a	...
Special machinery	20.6	4.6	6.8	0.2	...
Strength testing (7100.1)	...	a	...	...	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	14.9	...	...	0.2	...
Other (7100.0, 7100.9)	5.7	4.6	6.8	...	...
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	0.6	0.1	19.9	5.3	2.8
Grand total	47.2	27.7	60.3	22.4	32.0

Note: Part and accessories are included in the above data
(1) Schedule A in effect 1939
a Less than $50
Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM THE UNITED KINGDOM 1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	1,814.9	1,702.0	990.7	409.8	588.1	325.5	304.6
Generators (7090000)	26.2	96.4	52.4	32.4	37.7	5.1	0.7
Batteries (7090800-7090810)	32.9	72.1	6.5	9.8	8.7	1.5	1.5
Transformers and converters (7090010-7090020)	126.0	156.2	90.8	45.0	88.6	43.9	0.8
Switches and sockets (7090300-7090330)	160.7	46.9	4.2	4.2	18.1	7.9	2.0
Motors (7090400-7090430)	619.5	470.5	46.2	47.9	24.5	18.0	4.1
Lamps (7063000-7067000)	11.4	7.8	1.7	2.9	9.8	5.5	1.3
Laundry equipment (7090580, 7100700)	62.3	39.6	60.4	22.0	5.2	0.6	...
Cooking stoves (7090850)	0.7	0.5	0.6	1.3	a	0.9	...
Industrial heating (7090890, 7100200)	42.4	28.5	11.3	6.8	4.4	24.9	1.7
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	99.0	30.6	31.7	14.9	9.8	11.0	3.3
Vacuum cleaners (7069000-7069100)	61.6	133.2	232.0	42.8	66.6	18.9	136.1
Household utensils (7090510-7090560, 7090590)	17.1	7.4	13.9	5.2	4.4	1.7	5.7
Other (7090450-7090490, 7090750, 7090820, 7090990)	555.0	612.4	439.0	175.5	309.2	186.2	147.4
Signal and communication devices	928.6	1,260.4	818.7	134.4	59.5	29.4	43.9
Radio apparatus (7090660)	501.1	875.4	714.4	97.5	36.7	14.1	30.6
Television apparatus (7090680)	288.5	224.5	28.9	...	...	...	...
Telephone apparatus (7090690)	129.2	157.8	58.6	22.4	3.4	2.0	0.7
Telegraph apparatus (7090670)	9.8	2.7	16.9	14.6	19.4	13.3	12.6
Special machinery	2,700.6	1,110.2	734.3	430.3	514.2	477.0	594.4
Strength testing (7100100)	30.2	28.8	21.4	15.9	11.6	1.5	19.4
Cigarette making (7100400)	15.5	1.8	...	...	6.1	0.3	273.6
Candy wrapping (7100600)	...	22.6	21.2	51.8	28.8	44.9	99.0
Machinery that could be designed to work with or without electricity (7100800)	935.1	357.1	203.8	102.4	230.9	150.7	72.3
Other (7100300, 7100900)	1,719.8	699.9	487.9	260.2	236.9	279.7	130.1
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	129.1	67.6	34.2	35.2	48.9	30.9	9.0
Grand total	5,573.2	4,140.2	2,577.9	1,009.7	1,210.7	862.9	951.9

Note: Parts and accessories are included in the above data

a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM THE UNITED KINGDOM 1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	57.2	127.4	237.8	174.1	162.9
Generators (709.00)	0.5	...	...	23.5	14.6
Batteries (709.80-709.81)	0.5	0.5	0.2	0.3	0.2
Transformers and converters (709.01-709.02)	8.1	a	59.5	0.7	a
Switches and sockets (709.30-709.31)	0.3	1.9	3.8	8.2	8.1
Motors (709.40-709.43)	5.4	1.0	1.5	6.1	1.2
Lamps (7063.1-7067.0)	1.1	3.0	3.0	0.6	1.0
Laundry equipment (709.50, 7100.7)	0.2	...	...	...	...
Cooking stoves (709.85)	0.2	...	...	a	...
Industrial heating (709.89)	a	4.3	0.3	...	15.3
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	2.1	3.0	0.4	32.2	4.8
Vacuum cleaners (7069.0-7069.1)	2.0	1.5	17.5	21.6	2.3
Household utensils (709.51-709.59)	...	...	...	...	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	36.9	112.1	151.7	80.6	115.4
Signal and communication devices	19.9	94.6	23.3	7.0	10.6
Radio apparatus (709.71-709.76)	11.8	25.8	19.1	3.3	6.8
Telephone apparatus (709.69)	4.9	65.3	2.4	1.1	...
Telegraph apparatus (709.67)	3.2	3.5	1.8	2.6	3.9
Special machinery	112.0	181.4	42.7	52.4	...
Strength testing (7100.1)	6.3	4.5	1.3	2.7	...
Cigarette making (7100.4)	0.2	...	...	...	...
Candy wrapping (7100.6)	2.1	...	...	...	...
Machinery that could be designed to work with or without electricty (7100.8)	8.8	...	...	...	...
Other (7100.0, 7100.9)	94.5	176.9	41.4	49.7	...
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	13.6	5.5	37.5	89.5	22.0
Grand total	202.7	408.9	341.4	323.0	195.5

Note: Parts and accessories are included in the above data
(1) Schedule A in effect 1939. a Less than $50
Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM BELGIUM
1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	943.3	1,284.5	330.3	217.9	49.7	0.4	a
Generators (7090000)	0.1	...	...	...	...	...	...
Batteries (7090800-7090810)	0.2	...	...	a	0.1	a	...
Transformers and converters (7090010-7090020)	6.8	5.9	...	...	...	...	...
Switches and sockets (7090300-7090330)	0.4	0.2	0.3	...	0.7	...	...
Motors (7090400-7090430)	907.1	1,244.2	304.9	204.1	44.9	0.2	a
Lamps (7063000-7067000)	14.7	17.6	8.6	3.1	...	...	...
Laundry equipment (7090580, 7100700)	a	a	2.0	...	...	...	...
Cooking stoves (7090850)	...	...	...	...	...	...	...
Industrial heating (7090890, 7100200)	0.8	...	...	...	...	...	...
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	6.3	0.7	...	...	...	...	...
Vacuum cleaners (7069000-7069100)	...	...	...	...	...	...	...
Household utensils (7090510-7090560, 7090590)	...	...	...	...	...	...	a
Other (7090450-7090490, 7090750, 7090820, 7090990)	7.0	15.9	14.5	10.8	3.9	0.2	...
Signal and communication devices	134.3	297.2	104.9	68.5	74.2	92.0	24.5
Radio apparatus (7090660)	1.3	58.1	31.0	...	...	a	0.4
Television apparatus (7090680)	...	...	...	...	...	...	...
Telephone apparatus (7090690)	130.4	217.3	73.8	59.3	74.2	92.0	24.2
Telegraph apparatus (7090670)	2.7	21.9	0.1	9.2	...	...	...
Special machinery	678.1	96.3	36.5	...	6.9	2.8	1.0
Strength testing (7100100)	...	...	...	...	...	2.6	...
Cigarette making (7100400)	...	...	...	...	...	...	...
Candy wrapping (7100600)	...	...	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100800)	533.8	85.3	36.3	...	6.9	...	...
Other (7100300, 7100900)	144.3	11.0	0.2	...	...	0.2	1.0
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	...	...	...	...	2.5	...	0.1
Grand total	1,755.7	1,678.1	471.7	286.4	133.3	95.2	25.6

Note: Parts and accessories are included in the above data

a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM BELGIUM 1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	14.5	3.4	1.7	2.0	0.9
Generators (709.00)	...	...	...	...	...
Batteries (709.80-709.81)	a	0.1	a	...	a
Transformers and converters (709.01-709.02)	...	...	...	...	...
Switches and sockets (709.30-709.31)	a	0.1	...	...	...
Motors (709.40-709.43)	...	a	0.2	...	...
Lamps (7063.1-7067.0)	13.8	2.6	a	0.1	a
Laundry equipment (709.50, 7100.7)	a	...	...	...	...
Cooking stoves (709.85)	...	a	...	...	...
Industrial heating (709.89)	...	...	...	...	...
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	...	...	0.7	...	...
Vacuum cleaners (7069.0-7069.1)	...	a	...	...	...
Household utensils (709.51-709.59)	...	...	...	...	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	0.6	0.6	0.7	1.9	0.9
Signal and communication devices	33.7	21.2	18.7	9.6	2.0
Radio apparatus (709.71-709.76)	0.2	0.2	1.4	...	0.2
Telephone apparatus (709.69)	33.4	21.0	17.4	9.6	1.8
Telegraph apparatus (709.67)	...	...	...	...	...
Special machinery	0.2	1.3	0.3	0.7	...
Strength testing (7100.1)	...	...	...	...	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	...	...	...	...	...
Other (7100.0, 7100.9)	0.2	1.3	0.3	0.7	...
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	...	...	...	...	...
Grand total	48.3	25.9	20.7	12.2	2.9

Note: Parts and accessories are included in the above data
(1) Schedule A in effect 1939. a. Less than $50
Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM WEST GERMANY 1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	528.3	433.6	248.5	53.6	6.5	11.1	0.8
Generators (7090000)	5.0	18.0	3.3	...	...	...	0.5
Batteries (7090800-7090810)	1.3	1.5	...	0.8	...	...	a
Transformers and converters (7090010-7090020)	38.7	56.7	42.7	0.3	...	0.8	...
Switches and sockets (7090300-7090330)	35.8	19.9	1.8	2.3	0.7	...	...
Motors (7090400-7090430)	75.2	21.9	8.7	1.2	2.1	0.1	...
Lamps (7063000-7067000)	8.2	6.6	4.3	2.1	0.7	...	...
Laundry equipment (7090580, 7100700)	8.5	1.5	0.2	...	...	...	...
Cooking stoves (7090850)	0.1	a	...	...	...	...	...
Industrial heating (7090890, 7100200)	99.7	7.4	1.7	13.2	0.6	...	...
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	122.5	67.2	38.5	26.1	0.3	10.1	0.2
Vacuum cleaners (7069000-7069100)	8.1	...	...	...	...	a	0.1
Household utensils (7090510-7090560, 7090590)	1.0	0.7	...	0.1	...	...	...
Other (7090450-7090490, 7090750, 7090820, 7090990)	124.3	232.3	135.4	7.6	2.0	0.1	a
Signal and communication devices	123.8	626.6	265.6	1.9	0.1	0.2	0.1
Radio apparatus (7090660)	94.0	616.6	240.1	0.8	0.1	0.2	0.1
Television apparatus (7090680)	0.4	4.3	25.2	...	...	...	...
Telephone apparatus (7090690)	13.6	5.6	0.2	0.1	...	...	0.1
Telegraph apparatus (7090670)	15.8	...	0.2	1.0	...	...	...
Special machinery	940.8	291.2	81.2	45.2	73.1	...	0.2
Strength testing (7100100)	24.9	2.2	15.6	5.3	...	...	...
Cigarette making (7100400)	...	0.9	...	...	...	...	...
Candy wrapping (7100600)	3.6	...	0.8	...	...	...	...
Machinery that could be designed to work with or without electricity (7100800)	641.5	171.2	48.8	35.8	72.9	...	0.1
Other (7100300, 7100900)	270.7	117.0	16.0	4.1	0.1	...	0.1
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	18.7	5.0	...	2.4	a	...	...
Grand total	1,611.6	1,356.4	595.4	103.0	79.6	11.4	1.2

Note: Parts and accessories are included in the above data

a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM GERMANY 1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	484.7	293.5	342.2	362.3	358.1
Generators (709.00)	45.3	3.7	0.4	1.9	...
Batteries (709.80-709.81)	0.6	0.7	0.9	0.4	1.0
Transformers and converters (709.01-709.02)	3.4	0.3	1.3	6.6	0.3
Switches and sockets (709.30-709.31)	22.7	36.8	27.3	17.9	8.9
Motors (709.40-709.43)	19.4	7.0	7.7	3.1	2.6
Lamps (7063.1-7067.0)	3.9	7.1	6.6	9.9	4.3
Laundry equipment (709.50, 7100.7)	0.2	a	a	a	...
Cooking stoves (709.85)	a	a	0.1	...	...
Industrial heating (709.89)	2.4	2.8	0.4	0.2	21.7
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	36.0	74.1	95.1	62.1	47.0
Vacuum cleaners (7069.0-7069.1)	6.7	16.2	54.9	31.9	13.7
Household utensils (709.51-709.59)	...	...	...	0.1	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	344.2	144.7	147.5	228.3	258.6
Signal and communication devices	22.1	29.2	5.4	11.9	11.3
Radio apparatus (709.71-709.76)	20.4	29.0	3.0	11.5	11.2
Telephone apparatus (709.69)	1.7	0.1	2.5	...	...
Telegraph apparatus (709.67)	...	...	...	0.4	0.1
Special machinery	77.7	138.2	157.4	165.0	11.0
Strength testing (7100.1)	1.2	1.5	2.4	0.4	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	3.1	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	17.9	...	...	...	...
Other (7100.0, 7100.9)	55.4	136.7	155.0	164.6	11.0
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	0.1	0.7	a	0.1	0.2
Grand total	584.6	461.5	505.1	539.2	380.7

Note: Parts and accessories are included in the above data

(1) Schedule A in effect 1939.

a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM THE NETHERLANDS
1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	396.5	146.3	287.6	128.3	38.4	5.8	4.6
Generators (7090000)	...	0.7	0.5	...	0.1	a	...
Batteries (7090800-7090810)	...	...	a	...	...	...	...
Transformers and converters (7090010-7090020)	a	1.8	1.0	2.8	a	1.0	...
Switches and sockets (7090300-7090330)	2.8	1.1	1.0	0.1	...	...	...
Motors (7090400-7090430)	16.5	0.3	0.1	...	a	...	a
Lamps (7063000-7067000)	1.6	1.3	0.7	0.4	2.3	0.9	a
Laundry equipment (7090580, 7100700)	0.3	1.2	0.4	...	...	...	...
Cooking stoves (7090850)	...	...	a	...	a	...	...
Industrial heating (7090890, 7100200)	7.1	0.4	a	0.1	...	0.1	...
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	205.8	90.7	73.6	28.8	5.1	1.3	0.6
Vacuum cleaners (7069000-7069100)	0.3	0.3	0.8	0.2	0.1	1.4	0.7
Household utensils (7090510-7090560, 7090590)	...	...	0.2	...	...	...	2.4
Other (7090450-7090490, 7090750, 7090820, 7090990)	162.1	48.6	209.3	95.9	30.8	1.1	0.8
Signal and communication devices	256.2	304.9	297.0	457.4	295.5	179.8	86.5
Radio apparatus (7090660)	194.3	236.2	264.5	434.4	295.0	179.7	80.6
Television apparatus (7090680)	1.2	24.1	17.3	...	...	...	...
Telephone apparatus (7090690)	0.7	...	0.2	0.3	0.5	...	0.1
Telegraph apparatus (7090670)	60.0	44.6	15.0	22.7	a	0.1	5.8
Special machinery	663.0	72.3	60.6	39.2	15.3	6.2	0.4
Strength testing (7100100)	...	...	...	...	0.6	0.9	0.1
Cigarette making (7100400)	...	...	...	...	...	...	...
Candy wrapping (7100600)	...	...	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100800)	158.1	23.3	43.7	2.3	4.7	2.4	0.3
Other (7100300, 7100900)	505.0	49.0	16.9	36.9	10.1	2.9	...
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	3.9	...	0.2	0.4	a	...	...
Grand total	1,319.7	523.5	645.4	625.4	349.3	191.8	91.4

Note: Parts and accessories are included in the above data

a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM THE NETHERLANDS 1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	79.8	221.9	132.3	80.1	156.8
Generators (709.00)	...	...	...	...	...
Batteries (709.80-709.81)	...	a	a	...	...
Transformers and converters (709.01-709.02)	0.7	a	a	0.3	...
Switches and sockets (709.30-709.31)	...	...	...	...	0.1
Motors (709.40-709.43)	0.9	15.9	35.2	2.8	10.2
Lamps (7063.1-7067.0)	5.2	3.1	1.7	0.4	a
Laundry equipment (709.50, 7100.7)	...	...	...	...	...
Cooking stoves (709.85)	a	...	...	...	...
Industrial heating (709.89)	...	...	...	...	...
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	26.9	83.8	90.0	73.4	143.1
Vacuum cleaners (7069.0-7069.1)	12.5	0.4	0.3	...	...
Household utensils (709.51-709.59)	a	...	...	...	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	33.5	118.6	5.0	3.2	3.4
Signal and communication devices	3.0	2.2	1.7	0.2	1.1
Radio apparatus (709.71-709.76)	3.0	2.2	1.5	0.2	1.1
Telephone apparatus (709.69)	...	...	0.1	...	...
Telegraph apparatus (709.67)	...	...	...	...	...
Special machinery	a	1.1	12.7	1.1	...
Strength testing (7100.1)	...	...	...	...	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	a	...	...	...	...
Other (7100.0, 7100.9)	...	1.1	12.7	1.1	...
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	...	...	...	...	...
Grand total	82.8	225.1	146.7	81.4	157.9

Note: Parts and accessories are included in the above data

(1) Schedule A in effect 1939. a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM SWITZERLAND
1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	501.4	408.5	137.1	104.5	80.7	48.4	34.5
Generators (7090000)	17.9	153.0	...	...	1.5	...	6.6
Batteries (7090800-7090810)	a	0.9	...	a	...	0.1	...
Transformers and converters (7090010-7090020)	104.6	2.4	4.9	2.5	0.5	1.0	0.9
Switches and sockets (7090300-7090330)	190.0	60.6	54.1	43.0	6.8	2.3	1.9
Motors (7090400-7090430)	54.8	37.9	26.1	4.6	10.5	4.6	10.5
Lamps (7063000-7067000)	1.4	1.8	0.3	1.1	0.8	1.9	0.6
Laundry equipment (7090580, 7100700)	...	0.1	...	...	...	...	...
Cooking stoves (7090850)	0.1	a	...	...	0.1	...	a
Industrial heating (7090890, 7100200)	0.8	20.9	17.9	1.1	21.2	32.0	2.3
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	10.5	2.0	...	1.9	3.7	...	0.5
Vacuum cleaners (7069000-7069100)	...	0.1	...	...	0.2	...	...
Household utensils (7090510-7090560, 7090590)	0.1	6.5	...	...	6.7	a	0.5
Other (7090450-7090490, 7090750, 7090820, 7090990)	121.2	122.8	33.8	50.2	28.6	6.5	10.7
Signal and communication devices	50.5	44.1	4.2	12.0	30.9	2.4	0.1
Radio apparatus (7090660)	38.9	37.8	3.3	11.9	29.9	0.8	0.1
Television apparatus (7090680)	1.2	1.0	...	...	...	...	...
Telephone apparatus (7090690)	10.4	5.0	1.0	0.1	0.6	...	...
Telegraph apparatus (7090670)	...	0.2	...	...	0.4	1.6	...
Special machinery	621.6	343.4	223.8	117.1	61.9	27.3	55.2
Strength testing (7100100)	5.4	15.3	26.4	14.7	11.2	0.8	0.7
Cigarette making (7100400)	...	...	...	0.2	...	...	...
Candy wrapping (7100600)	...	0.2	0.2	...	...	...	14.2
Machinery that could be designed to work with or without electricity (7100800)	87.4	150.7	48.4	16.3	24.0	18.3	15.5
Other (7100300, 7100900)	528.8	177.1	148.8	85.9	26.7	8.3	24.7
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	123.2	682.2	16.0	26.7	10.3	10.9	48.1
Grand total	1,296.7	1,478.2	381.2	260.3	183.8	89.1	137.9

Note: Parts and accessories are included in the above data

a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM SWITZERLAND 1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	13.8	15.8	33.8	44.0	35.6
Generators (709.00)	...	...	...	...	...
Batteries (709.80-709.81)	0.2	...	...	...	0.1
Transformers and converters (709.01-709.02)	0.6	0.3	a	0.3	...
Switches and sockets (709.30-709.31)	1.4	4.0	17.6	36.0	17.7
Motors (709.40-709.43)	1.0	...	4.0	3.0	0.8
Lamps (7063.1-7067.0)	0.1	a	a	...	a
Laundry equipment (709.50, 7100.7)	...	...	...	...	...
Cooking stoves (709.85)	...	...	...	...	...
Industrial heating (709.89)	...	...	...	...	...
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	...	a	...	0.2	...
Vacuum cleaners (7069.0-7069.1)	...	0.1	...	...	...
Household utensils (709.51-709.59)	...	...	...	...	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	10.5	11.5	12.1	4.6	17.0
Signal and communication devices	...	0.1	...	...	...
Radio apparatus (709.71-709.76)	...	0.1	...	...	...
Telephone apparatus (709.69)	...	...	...	...	...
Telegraph apparatus (709.67)	...	...	...	...	...
Special machinery	2.0	2.6	4.0	7.7	5.0
Strength testing (7100.1)	...	...	0.4	3.1	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	0.1	...	...	...	...
Other (7100.0, 7100.9)	1.9	2.6	3.7	4.7	5.0
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	85.8	104.9	3.3	43.5	43.8
Grand total	101.6	123.3	41.1	95.2	84.4

Note: Parts and accessories are included in the above data
(1) Schedule A in effect 1939.
a Less than $50
Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM SWEDEN
1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	319.8	510.3	206.8	167.0	90.9	38.4	15.5
Generators (7090000)	13.8	5.9	...	...	...	3.9	...
Batteries (7090800-7090810)	66.3	137.3	18.4	7.5	0.2	...	a
Transformers and converters (7090010-7090020)	10.6	3.9	...	1.9	0.4	a	0.4
Switches and sockets (7090300-7090330)	10.8	3.9	10.6	8.0	4.8	3.6	a
Motors (7090400-7090430)	20.5	7.5	32.5	28.7	2.3	6.7	7.9
Lamps (7063000-7067000)	a	4.2	...	3.1	a	0.1	0.1
Laundry equipment (7090580, 7100700)	0.5	...	0.1	1.0	...	3.1	0.7
Cooking stoves (7090850)	1.0	0.3	...	...	a	...	...
Industrial heating (7090890, 7100200)	4.5	6.6	0.6	10.5	24.5	0.9	1.1
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	129.1	99.0	54.4	77.8	54.3	16.0	2.4
Vacuum cleaners (7069000-7069100)	0.7	22.3	0.4	0.6	0.8	2.8	2.6
Household utensils (7090510-7090560, 7090590)	...	55.8	0.2	1.1	1.8	a	...
Other (7090450-7090490, 7090750, 7090820, 7090990)	62.0	163.5	89.2	26.8	1.8	1.3	0.3
Signal and communication devices	30.6	38.4	72.8	5.1	1.4	6.5	1.4
Radio apparatus (7090660)	1.2	24.4	56.8	1.6	0.7	5.5	0.1
Television apparatus (7090680)	...	...	...	...	...	...	...
Telephone apparatus (7090690)	28.9	14.0	15.9	3.6	0.7	0.8	1.2
Telegraph apparatus (7090670)	0.4	...	0.1	...	0.1	0.2	...
Special machinery	486.1	272.2	228.6	98.9	72.9	23.6	8.0
Strength testing (7100100)	...	17.0	5.7	20.0	1.2	...	0.4
Cigarette making (7100400)	11.2	6.4	...	17.9	...	...	...
Candy wrapping (7100600)	...	...	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100800)	266.8	25.6	60.6	25.8	58.1	21.9	5.2
Other (7100300, 7100900)	208.1	223.1	162.3	35.2	13.7	1.7	2.4
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	2.8	6.5	1.3	...	1.5	...	...
Grand total	839.3	827.5	509.5	271.0	166.7	68.5	24.9

Note: Parts and accessories are included in the above data a Less than $50
Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM SWEDEN 1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	22.1	34.9	44.5	39.4	172.9
Generators (709.00)	...	...	0.3	...	...
Batteries (709.80-709.81)	a	...	...	...	a
Transformers and converters (709.01-709.02)	0.4	...	...	a	...
Switches and sockets (709.30-709.31)	a	0.1	a	0.9	a
Motors (709.40-709.43)	0.4	0.5	1.2	...	...
Lamps (7063.1-7067.0)	...	0.8	0.1	0.1	...
Laundry equipment (709.50, 7100.7)	...	...	...	...	...
Cooking stoves (709.85)	0.1	...	...	a	...
Industrial heating (709.89)	1.2	...	...	...	...
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	17.2	17.0	11.4	10.2	5.5
Vacuum cleaners (7069.0-7069.1)	0.4	14.1	17.9	21.5	31.8
Household utensils (709.51-709.59)	...	...	...	...	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	2.3	2.4	13.6	6.7	135.6
Signal and communication devices	6.9	13.4	0.1	a	...
Radio apparatus (709.71-709.76)	0.1	0.3	...	a	...
Telephone apparatus (709.69)	6.8	13.1	0.1	...	...
Telegraph apparatus (709.67)	...	...	...	...	...
Special machinery	7.2	21.7	29.4	16.8	...
Strength testing (7100.1)	0.2	0.4	0.5	1.2	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	...	...	...	...	...
Other (7100.0, 7100.9)	7.0	21.3	28.9	15.6	...
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	...	1.3	...	...	...
Grand total	36.2	71.3	74.0	56.2	172.9

Note: Parts and accessories are included in the above data
(1) Schedule A in effect 1939. a Less than $50
Source: Bureau of the Census

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U. S. IMPORTS OF ELECTRICAL MACHINERY FROM FRANCE
1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	183.1	128.0	13.5	18.3	50.2	74.4	47.0
Generators (7090000)	74.1	1.3	0.5	0.3	...	...	3.3
Batteries (7090800-7090810)	11.6	23.7	1.4	1.3	2.7	0.2	a
Transformers and converters (7090010-7090020)	13.9	9.8	0.7	0.2	0.1	...	0.1
Switches and sockets (7090300-7090330)	20.9	10.6	0.7	4.3	2.3	a	a
Motors (7090400-7090430)	8.9	3.4	2.9	1.3	3.2	2.7	0.4
Lamps (7063000-7067000)	2.4	1.5	1.1	0.2	0.4	0.6	0.1
Laundry equipment (7090580, 7100700)	0.2	0.3	a	...	...	...	...
Cooking stoves (7090850)	...	0.2	...	...	...	...	...
Industrial heating (7090890, 7100200)	...	1.6	...	...	...	2.5	0.1
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	3.1	0.9	0.1	...	0.2	...	...
Vacuum cleaners (7069000-7069100)	a	...	...	0.1	...	...	...
Household utensils (7090510-7090560, 7090590)	0.2	0.3	0.4	0.9	0.3	...	a
Other (7090450-7090490, 7090750, 7090820, 7090990)	47.9	74.4	5.7	9.6	41.0	68.5	43.1
Signal and communication devices	29.4	1,386.0	286.1	0.4	1.6	1.4	0.3
Radio apparatus (7090660)	29.4	1,383.4	286.1	0.4	1.1	1.4	0.3
Television apparatus (7090680)	...	0.9	...	...	...	...	...
Telephone apparatus (7090690)	a	1.7	...	...	0.4	...	...
Telegraph apparatus (7090670)	a	...	...	...	...	...	...
Special machinery	130.1	184.8	46.2	69.0	59.9	10.7	24.2
Strength testing (7100100)	0.7	...	1.0	1.1	...	0.3	...
Cigarette making (7100400)	...	...	...	...	...	...	...
Candy wrapping (7100600)	...	...	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100800)	61.0	162.4	8.1	3.6	4.9	9.4	24.1
Other (7100300, 7100900)	68.5	22.3	37.2	64.2	55.0	1.0	0.1
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	...	0.7	0.2	...	...	...	...
Grand total	342.7	1,699.4	346.0	87.7	111.7	86.5	71.6

Note: Parts and accessories are included in the above data
Source: Bureau of the Census

a Less than $50

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM FRANCE 1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	139.5	199.4	90.6	115.3	85.0
Generators (709.00)	0.5	...	...	...	...
Batteries (709.80-709.81)	0.1	0.1	0.1	0.4	0.1
Transformers and converters (709.01-709.02)	1.7	...	...	...	...
Switches and sockets (709.30-709.31)	0.1	0.2	a	0.1	0.8
Motors (709.40-709.43)	0.3	0.3	0.1	0.6	a
Lamps (7063.1-7067.0)	0.6	1.3	2.3	2.4	2.0
Laundry equipment (709.50, 7100.7)	...	...	...	...	...
Cooking stoves (709.85)	...	...	...	...	...
Industrial heating (709.89)	...	...	...	...	...
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	0.6	1.6	0.3	0.7	0.5
Vacuum cleaners (7069.0-7069.1)	a	a	1.1	a	...
Household utensils (709.51-709.59)	...	...	...	...	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	135.5	196.0	86.7	111.1	81.5
Signal and communication devices	1.2	0.3	2.3	0.7	...
Radio apparatus (709.71-709.76)	0.9	0.3	0.5	0.5	...
Telephone apparatus (709.69)	0.3	...	1.8	0.1	...
Telegraph apparatus (709.67)	...	...	...	...	...
Special machinery	6.1	22.4	18.8	11.1	...
Strength testing (7100.1)	0.3	...	...	a	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	1.5	...	...	...	...
Other (7100.0, 7100.9)	4.4	22.4	18.8	11.1	...
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	...	...	...	...	...
Grand total	146.8	222.1	111.7	127.0	85.0

Note: Parts and accessories are included in the above data

(1) Schedule A in effect 1939. a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM ITALY
1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	22.1	64.6	12.7	12.5	3.8	7.6	0.6
Generators (7090000)	...	...	...	...	...	...	...
Batteries (7090800-7090810)	...	0.3	0.3	...	...	...	...
Transformers and converters (7090010-7090020)	0.6	0.2	0.4	...	...	a	...
Switches and sockets (7090300-7090330)	0.5	...	0.6	...	...	0.7	...
Motors (7090400-7090430)	11.8	40.6	0.3	0.6	0.2	2.7	...
Lamps (7063000-7067000)	1.4	1.8	1.0	a	...	...	...
Laundry equipment (7090580, 7100700)	...	...	...	...	...	...	...
Cooking stoves (7090850)	...	...	...	...	...	0.6	...
Industrial heating (7090890, 7100200)	0.1	...	...	6.1	a	...	...
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	2.3	7.1	7.6	5.5	1.5	...	...
Vacuum cleaners (7069000-7069100)	...	...	...	...	...	...	...
Household utensils (7090510-7090560, 7090590)	2.2	1.2	0.2	0.2	1.9	2.8	0.6
Other (7090450-7090490, 7090750, 7090820, 7090990)	3.2	13.4	2.4	0.2	0.3	0.8	...
Signal and communication devices	4.5	48.2	0.5	1.5	8.6	1.8	0.6
Radio apparatus (7090660)	...	48.2	0.1	a	7.7	1.8	0.6
Television apparatus (7090680)	...	...	...	...	...	...	...
Telephone apparatus (7090690)	...	...	a	1.5	0.9	...	...
Telegraph apparatus (7090670)	4.5	...	0.4	...	...	...	...
Special machinery	285.9	90.5	11.5	6.5	14.7	1.2	...
Strength testing (7100100)	4.0	7.4	...	...	a	...	...
Cigarette making (7100400)	...	...	...	...	...	...	...
Candy wrapping (7100600)	...	5.9	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100800)	129.9	73.2	6.7	6.5	11.6	1.2	...
Other (7100300, 7100900)	152.0	4.1	4.7	...	3.0	...	...
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7100950)	11.2	...	2.0	0.4	0.6	...	...
Grand total	323.7	203.3	26.8	20.9	27.7	10.7	1.2

Note: Parts and accessories are included in the above data

a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM ITALY 1935-1939

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	1.3	0.7	3.8	1.1	4.7
Generators (709.00)	...	...	...	...	1.0
Batteries (709.80-709.81)	...	...	...	...	...
Transformers and converters (709.01-709.02)	...	...	a	...	...
Switches and sockets (709.30-709.31)	...	...	...	...	...
Motors (709.40-709.43)	1.2	...	3.5	...	...
Lamps (7063.1-7067.0)	...	...	...	...	...
Laundry equipment (709.50, 7100.7)	...	...	...	...	...
Cooking stoves (709.85)	...	...	...	...	...
Industrial heating (709.89)	...	...	...	...	...
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	...	...	...	...	...
Vacuum cleaners (7069.0-7069.1)	...	a	...	...	...
Household utensils (709.51-709.59)	...	...	...	...	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	0.1	0.7	0.3	1.1	3.7
Signal and communication devices	...	0.1	0.7	...	...
Radio apparatus (709.71-709.76)	...	0.1	0.7	...	...
Telephone apparatus (709.69)	...	...	...	...	...
Telegraph apparatus (709.67)	...	...	...	...	...
Special machinery	1.2	...	2.5	...	...
Strength testing (7100.1)	...	...	...	...	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	a	...	...	...	...
Other (7100.0, 7100.9)	1.1	...	2.5	...	...
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	...	...	...	a	...
Grand total	2.5	0.8	7.1	1.1	4.7

Note: Parts and accessories are included in the above data
(1) Schedule A in effect 1939. a Less than $50
Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM JAPAN
1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers	1952	1951	1950	1949	1948	1947	1946
Electrical apparatus	580.5	590.4	364.7	419.8	1,922.0	123.2	30.1
Generators (7090000)	0.7	...	...	a	...	...	...
Batteries (7090800-7090810)	a	...	...	...	...	...	...
Transformers and converters (7090010-7090020)	a	0.4	3.5	1.9	...	...	...
Switches and sockets (7090300-7090330)	1.2	3.3	0.6	0.4	1.3	...	...
Motors (7090400-7090430)	13.5	9.1	4.5	...	...	...	...
Lamps (7063000-7067000)	547.3	547.2	347.0	414.4	1,919.2	120.1	30.1
Laundry equipment (7090580, 7100700)	...	...	1.0	...	...	...	...
Cooking stoves (7090850)	...	...	...	...	...	...	...
Industrial heating (7090890, 7100200)	...	...	0.2	...	...	...	...
X-ray and therapeutic apparatus (7090600, 7090700-7090710)	3.8	19.6	2.9	0.2	...	...	...
Vacuum cleaners (7069000-7069100)	...	...	...	...	...	...	...
Household utensils (7090510-7090560, 7090590)	a	a	0.4	1.2	a	...	...
Other (7090450-7090490, 7090750, 7090820, 7090990)	14.0	10.8	4.9	1.6	1.4	3.1	0.1
Signal and communication devices	4.5	177.8	29.3	...	...	...	...
Radio apparatus (7090660)	4.3	177.7	29.3	...	...	...	...
Television apparatus (7090680)	...	0.1	...	...	...	...	...
Telephone apparatus (7090690)	0.2	0.1	...	...	...	...	...
Telegraph apparatus (7090670)	...	...	...	...	...	...	...
Special machinery	60.0	15.6	7.5	4.6	a	...	...
Strength testing (7100100)	...	...	...	...	...	...	...
Cigarette making (7100400)	...	...	...	...	...	...	...
Candy wrapping (7100600)	...	...	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100800)	10.2	5.0	6.2	1.4	a	...	...
Other (7100300, 7100900)	49.8	10.7	1.3	3.2	...	...	...
Turbines, steam engines and water wheels (7110000-7110010, 7110090, 7800950)	0.1	0.3	...	...	...	...	...
Grand total	645.1	785.2	401.7	424.4	1,922.0	123.2	30.1

Note: Parts and accessories are included in the above data a Less than $50

Source: Bureau of the Census

U. S. IMPORTS OF ELECTRICAL MACHINERY FROM JAPAN 1946-1952

Thousands of Dollars

Items and Schedule A commodity numbers (1)	1939	1938	1937	1936	1935
Electrical apparatus	807.2	531.6	1,038.6	1,168.5	1,046.7
Generators (709.00)	...	...	...	...	...
Batteries (709.80-709.81)	a	0.3	1.5	0.7	1.5
Transformers and converters (709.01-709.02)	...	...	...	...	...
Switches and sockets (709.30-709.31)	a	0.1	1.0	0.7	0.9
Motors (709.40-709.43)	0.1	0.2	3.1	0.7	0.2
Lamps (7063.1-7067.0)	767.8	492.3	965.3	1,114.8	1,001.4
Laundry equipment (709.50, 7100.7)	...	0.2	1.5	1.5	0.1
Cooking stoves (709.85)	...	...	...	a	...
Industrial heating (709.89)	...	...	...	...	...
X-ray and therapeutic apparatus (709.60, 709.70-709.71)	0.3	0.1	2.6	0.7	0.3
Vacuum cleaners (7069.0-7069.1)	0.1	0.1	...	0.2	...
Household utensils (709.51-709.59)	...	...	...	...	...
Other (709.45-709.49, 709.75, 709.82, 709.98-709.99)	38.8	38.3	63.7	49.2	42.3
Signal and communication devices	...	...	a	0.3	a
Radio apparatus (709.71-709.76)	...	...	a	0.3	a
Telephone apparatus (709.69)	...	...	...	a	...
Telegraph apparatus (709.67)	...	...	...	...	...
Special machinery	1.4	0.9	0.6	2.2	...
Strength testing (7100.1)	...	...	...	...	...
Cigarette making (7100.4)	...	...	...	...	...
Candy wrapping (7100.6)	...	...	...	...	...
Machinery that could be designed to work with or without electricity (7100.8)	...	...	...	...	...
Other (7100.0, 7100.9)	1.4	0.9	0.6	2.2	...
Turbines, steam engines and water wheels (711.00-711.01, 711.04-711.05)	...	...	...	...	...
Grand total	808.6	532.5	1,039.3	1,171.0	1,046.7

Note: Parts and accessories are included in the above data
(1) Schedule A in effect 1939. a Less than $50
Source: Bureau of the Census

Section III

United States exports of electrical products by type of product and by geographic area, prewar and postwar.

SECTION II

Summary

Exports have averaged in the postwar years $483 million, almost five times their prewar average. They are not, however, matching the recent percentage increases of imports. For example, in the first six months of 1953 they increased 9% over the first six months of 1952, compared to a 50% increase in imports in the same period.

If exports to Canada are excluded, exports to the remaining countries actually showed a 7% decline in the first half of this year compared to the first half of 1952.

SECTION II

The tables in the following section show U.S. exports of electrical products for the years 1935-39 and 1946-52 in two ways: total exports going to each of the world's continents or geographic areas with sub-totals to important countries within the area; and total exports of each of 30 electric commodity groups to each of the same continents or geographic areas.

Although our total exports to the world of electrical products rose from $76.5 million in 1935 to $105.6 million in 1939, $499.8 million in 1948 and $616.4 million last year, they have remained a nearly constant percentage of total U.S. exports over this entire period, with, however, a rise in 1952 to 4.1% from 3.6% in 1951.

Among the geographic areas, Latin America (North and South America, excluding Canada) constantly took more of our electrical machinery and apparatus than any other area - $238.9 million worth in 1952. Up until 1950, the continent of Europe stood second. From that year on, Canada, which is important enough to constitute a separate geographic area in itself, has assumed second place in the list of our markets for electrical goods, importing $166.7 million of our electrical products in 1952.

Leaving aside Canada, several individual Latin American countries - Brazil, Mexico, Cuba in that order - took more of our electrical exports in the postwar years than any other country. Before the war, the United Kingdom was our most important outlet, with Brazil, Mexico and Argentina following.

Among the commodity groups, exports of refrigerators stand out as the highest in value, $82.4 million in 1952, followed by "Motors and controls," and "Generators." These same commodities remain generally in the foreground in other years as well.

The index numbers tell us that our total exports of electrical products are now 630% of what they were in the 1935-39 base period. Exports to Canada have jumped far ahead of the overall rate (1952=1086), while exports to Europe have grown little more than half of the general average (1952=387), and exports to Africa only about one-third.

Special attention is called to the last table in this section entitled: "Items Not Included in Detailed Trading Area Tables." It will be noted that the value of the "Special Category Type I" items represents a rather high proportion of the "Grand total," about 18% in 1952. Unfortunately, no area or country of destination breakdown can be given for these items as such details are considered by the government to be security information.

Less than 20% of the items, and consequently, only some unspecified proportion of the above-mentioned value of "Special Category Type I", refers to electrical products, the remainder being composed of other machinery, various modes of transport, chemicals and munitions. The following are the electrical products included in this Special Category (with an

indication of their Schedule B code numbers): 706660 - Searchlights and airport beacons; 707615, 707620 - Radio transmitting and transmitting-receiving sets; 707630, 707640 - Direction and range finders, and radio beam equipment; 708400 - Electronic signaling and detection apparatus and parts, including radar, 500 megacycles and over; 709998 - Electrical apparatus and parts, n.e.s.(1) Because the majority of these items fall under "Signal and communications devices," the fact that exports of this group since 1949 show a less steeply upward trend than do "Machinery and apparatus" exports is at least partially explained.

While export commodity groupings for both prewar and postwar years are generally comparable, it should be kept in mind that they are not entirely comparable to import commodity groupings, due to the different systems by which they are classified and to the fact that export commodity items are generally further broken down in the source than imports and include more types of commodities. For example, postwar imports of "Signal and communications devices" are split up among "Radio apparatus," "Television apparatus," "Telephone apparatus," and "Telegraph apparatus," that is, the most complete breakdown which the source permits. On the other hand, exports for the same years are broken down into eight separate categories and could have been broken down still further. In spite of the foregoing, one export category sometimes includes commodities shown in two import categories; "Radio and television broadcasting station transmitting equipment," "Radio and television receiving tubes," "Radio and television capacitors, and resistors, inductors, and receiving set components" all fall partly in the first and partly in the second of the first two import groupings. Three export categories are not specified anywhere in the items of the import source: "Starting, lighting and ignition equipment;" "Conduit, metal and nonmetal, fittings, outlets and switch boxes;" "Lighting fixtures, portable lamps and parts." Finally, "Vacuum cleaners," and "Household utensils," which are shown separately among the imports, are lumped together under "Other machinery and appliances" in the exports.

For further comment on the export tables, see Section I.

(1) U.S. Bureau of the Census. Foreign Trade Statistics Notes, September, 1950, pp. 63-64

UNITED STATES EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS AND UNITED STATES TOTAL DOMESTIC EXPORTS

(Millions of Dollars)

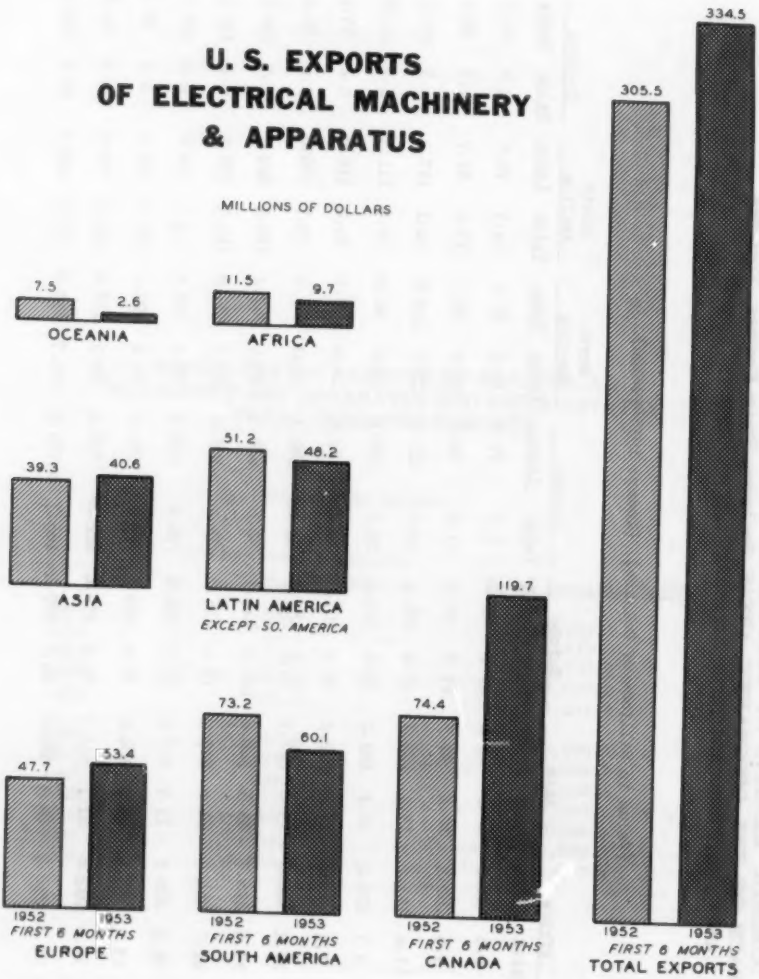
	Electrical Machinery and Apparatus	Total Domestic Exports
1935	76.5	2,243.1
1936	91.6	2,419.0
1937	113.3	3,298.9
1938	102.5	3,057.2
1939	105.5	3,123.3
1946	312.9	9,500.2
1947	573.9	14,252.3
1948	499.8	12,532.1
1949	451.5	11,936.1
1950	388.2	10,142.4
1951	536.6	14,879.5
1952	616.4	15,037.4

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO EACH OF THE GEOGRAPHIC AREAS (Including Steam Engines, Turbines and Water Wheels and Parts; Excluding "Special Category" Items)

(Value in Millions of Dollars) (Index: 1935-39=100)

	Total		Africa		Asia		Europe		Canada		North America		South America		Oceania	
	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index
1935	76.5	78.2	8.0	86.8	10.2	85.4	20.7	85.0	8.9	57.9	10.1	83.5	14.5	70.6	4.0	91.3
1936	91.6	93.6	9.9	107.4	10.8	90.5	23.8	97.8	13.8	89.8	11.9	98.3	17.2	83.7	4.3	98.2
1937	113.3	115.8	11.4	123.6	13.1	109.7	25.4	104.4	19.0	123.7	15.7	129.8	24.1	117.3	4.5	102.7
1938	102.5	104.7	9.7	105.2	12.2	102.2	25.6	105.2	16.3	106.1	10.9	90.0	22.9	111.5	4.9	111.9
1939	105.5	107.8	7.1	77.0	13.4	112.2	26.2	107.6	18.8	122.4	11.9	98.3	24.0	116.8	4.2	95.9
1946	312.9	319.7	17.2	186.6	29.6	247.9	74.8	307.3	59.0	384.1	49.0	405.0	79.7	388.0	3.6	82.2
1947	573.9	586.3	37.5	406.7	65.5	548.6	100.9	414.5	96.6	628.9	90.4	747.1	170.3	829.1	12.7	290.0
1948	499.8	510.6	41.0	444.7	61.6	515.9	77.1	316.8	77.2	502.6	83.1	686.8	154.7	753.2	5.4	116.4
1949	451.5	461.3	26.4	286.3	73.9	618.9	79.5	326.6	76.6	498.7	70.0	578.5	119.1	579.8	6.0	137.0
1950	388.2	396.6	15.2	164.9	45.9	384.4	72.9	299.5	77.0	501.3	71.4	590.1	101.7	495.1	4.3	98.2
1951	536.6	548.2	19.6	212.6	61.1	511.7	82.6	339.4	122.6	798.2	89.3	738.0	155.2	755.6	6.3	143.8
1952	616.4	629.8	21.8	236.4	82.3	689.2	94.3	387.4	166.7	1,085.6	103.7	857.0	135.2	658.2	12.4	283.1

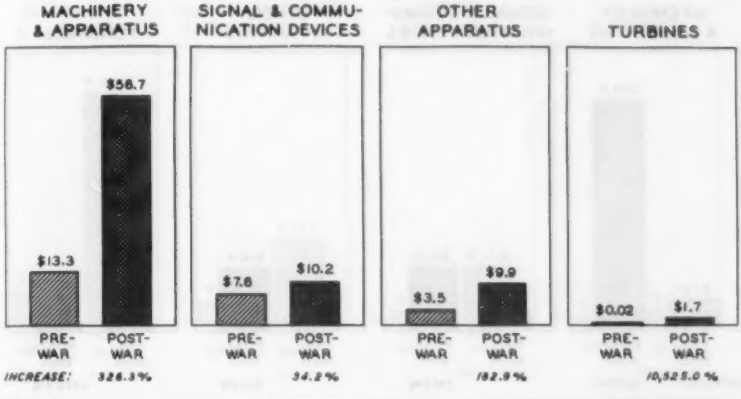
Source: Bureau of the Census

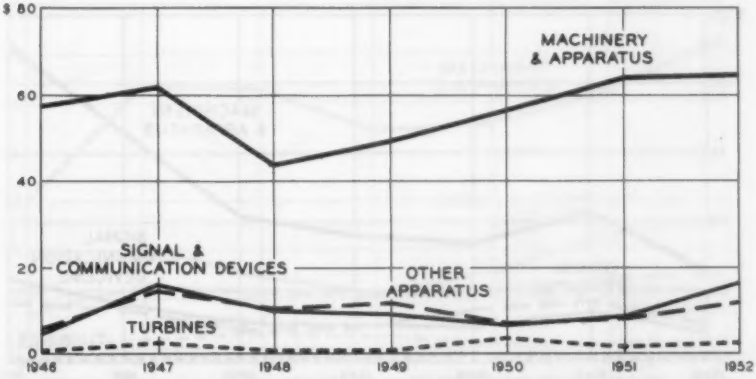

U. S. EXPORTS
OF ELECTRICAL MACHINERY
& APPARATUS
MILLIONS OF DOLLARS
7.5
2.6
OCEANIA
11.5
9.7
AFRICA
39.3
40.6
ASIA
51.2
48.2
LATIN AMERICA
EXCEPT SO. AMERICA
47.7
53.4
1952
1953
FIRST 6 MONTHS
EUROPE
73.2
60.1
1952
1953
FIRST 6 MONTHS
SOUTH AMERICA
74.4
119.7
1952
1953
FIRST 6 MONTHS
CANADA
305.5
334.5
1952
1953
FIRST 6 MONTHS
TOTAL EXPORTS

EXPORTS TO EUROPE

DOLLAR FIGURES IN MILLIONS

PREWAR: 1935-1939 AVERAGE POSTWAR: 1946-1952 AVERAGE



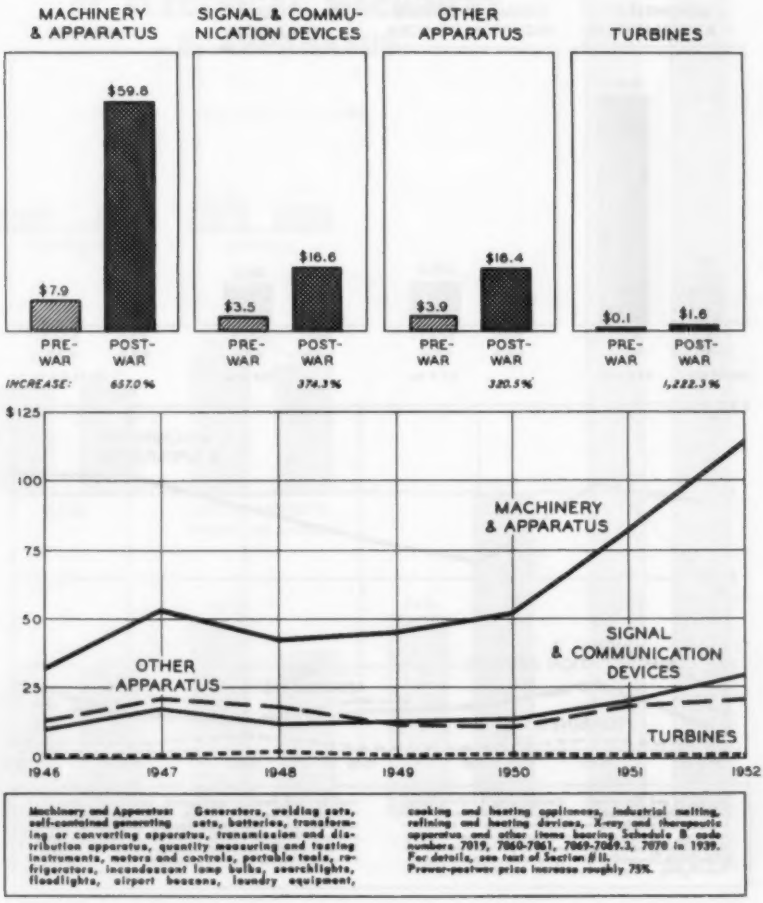


Machinery and Apparatus: Generators, welding sets, self-contained generating sets, batteries, transforming or converting apparatus, transmission and distribution apparatus, quantity measuring and testing instruments, motors and controls, portable tools, refrigerators, incandescent lamp bulbs, searchlights, floodlights, airport beacons, laundry equipment, cooking and heating appliances, industrial melting, refining and heating devices, X-ray and therapeutic apparatus and other items bearing Schedule B code numbers 7019, 7060-7061, 7069-7069.3, 7070 in 1939. For details, see text of Section 9 II.
Prewar-postwar price increase roughly 75%.

EXPORTS TO CANADA

DOLLAR FIGURES IN MILLIONS

PREWAR: 1935–1939 POSTWAR: 1946–1952

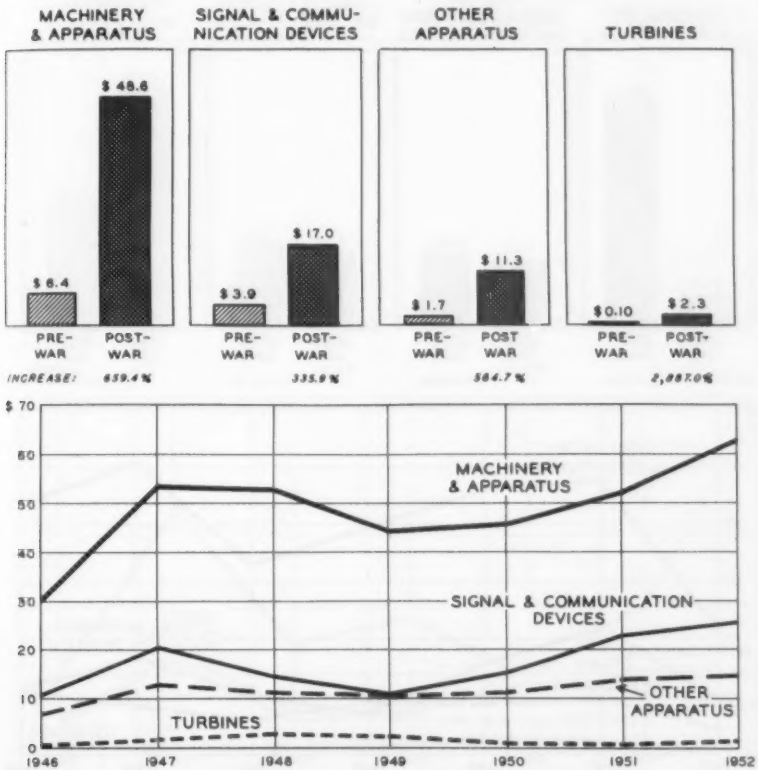


Machinery and Apparatus: Generators, welding sets, self-contained generating sets, batteries, transforming or converting apparatus, transmission and distribution apparatus, quantity measuring and testing instruments, motors and controls, portable tools, refrigerators, incandescent lamp bulbs, searchlights, floodlights, airport beacons, laundry equipment, cooking and heating appliances, industrial melting, refining and heating devices, X-ray and therapeutic apparatus and other items bearing Schedule B code numbers 7019, 7060-7061, 7069-7069.3, 7070 in 1939. For details, see text of Section II b.
Prewar-postwar price increase roughly 75%.

EXPORTS TO NORTH AMERICA EXCL. CANADA

DOLLAR FIGURES IN MILLIONS

PREWAR: 1935 - 1939 AVERAGE POSTWAR: 1946 - 1952 AVERAGE

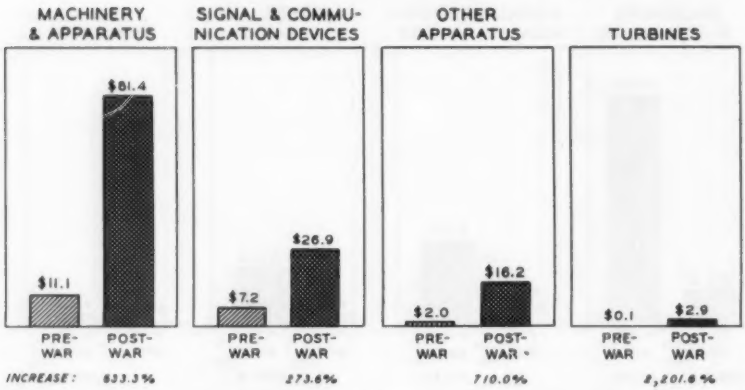


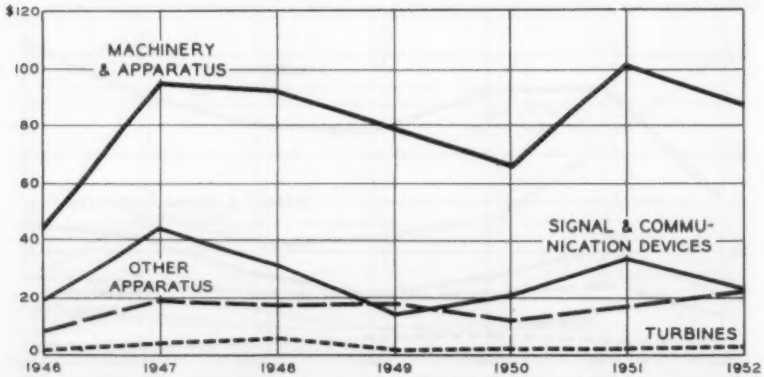
Machinery and Apparatus: Generators, welding sets, self-contained generating sets, batteries, transforming or converting apparatus, transmission and distribution apparatus, quantity measuring and testing instruments, motors and controls, portable tools, refrigerators, incandescent lamp bulbs, searchlights, floodlights, airport beacons, laundry equipment, cooking and heating appliances, industrial melting, refining and heating devices, X-ray and therapeutic apparatus and other items bearing Schedule B code numbers 7019, 7060-7061, 7069-7069.3, 7070 in 1939. For details, see text of Section II.
Prewar-postwar price increase roughly 75%.

EXPORTS TO SOUTH AMERICA

DOLLAR FIGURES IN MILLIONS

PREWAR: 1935-1939 AVERAGE POSTWAR: 1946-1952 AVERAGE



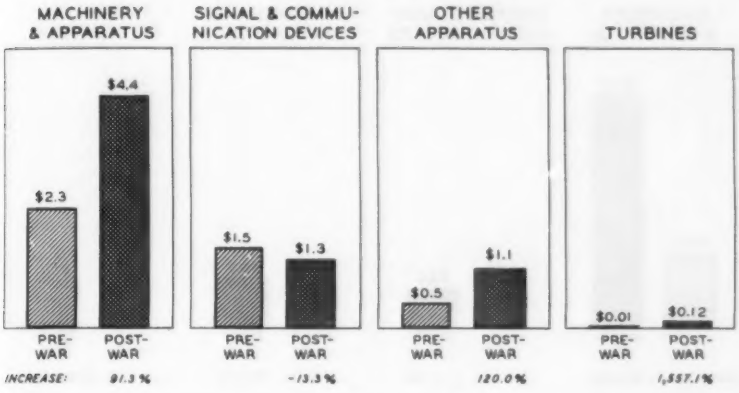


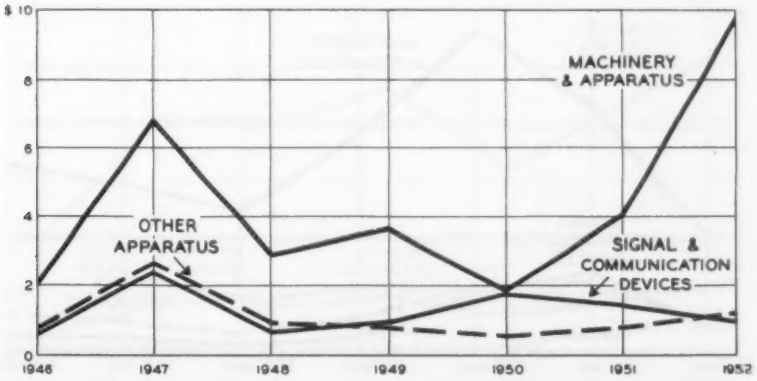
Machinery and Apparatus: Generators, welding sets, self-contained generating sets, batteries, transforming or converting apparatus, transmission and distribution apparatus, quantity measuring and testing instruments, motors and controls, portable tools, refrigerators, incandescent lamp bulbs, searchlights, floodlights, airport beacons, laundry equipment, cooking and heating appliances, industrial melting, refining and heating devices, X-ray and therapeutic apparatus and other items bearing Schedule B code numbers 7019, 7060-7061, 7069-7069.3, 7070 in 1939. For details, see text of Section #11.
Prewar-postwar price increase roughly 75%.

EXPORTS TO OCEANIA

DOLLAR FIGURES IN MILLIONS

PREWAR: 1935-1939 AVERAGE POSTWAR: 1946-1952 AVERAGE



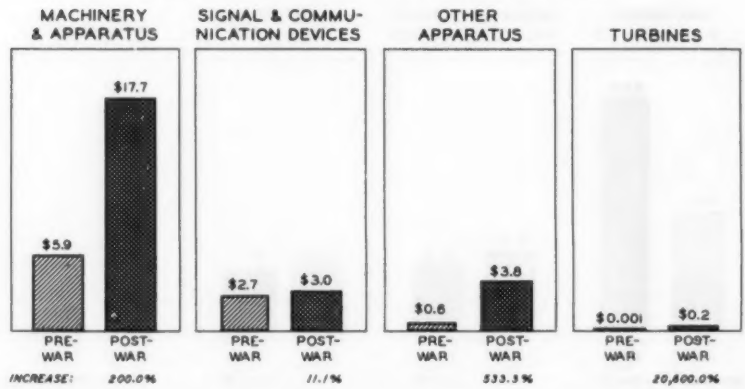


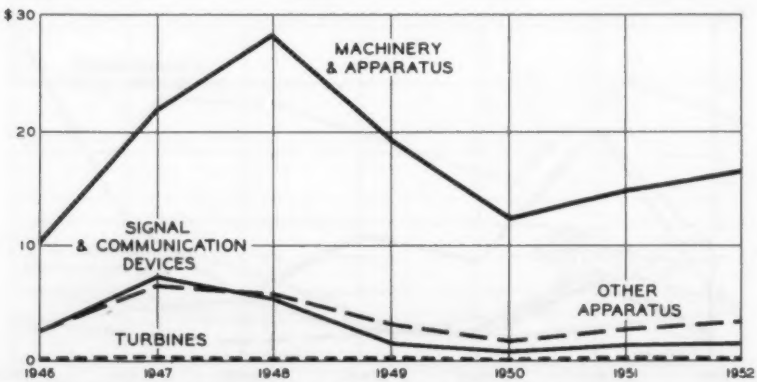
Machinery and Apparatus: Generators, welding sets, self-contained generating sets, batteries, transforming or converting apparatus, transmission and distribution apparatus, quantity measuring and testing instruments, motors and controls, portable tools, refrigerators, incandescent lamp bulbs, searchlights, floodlights, airport beacons, laundry equipment, cooking and heating appliances, industrial melting, refining and heating devices, X-ray and therapeutic apparatus and other items bearing Schedule B code numbers 7019, 7060-7061, 7069-7069.3, 7070 in 1939. For details, see text of Section 811. Prewar-postwar price increase roughly 75%.

EXPORTS TO AFRICA

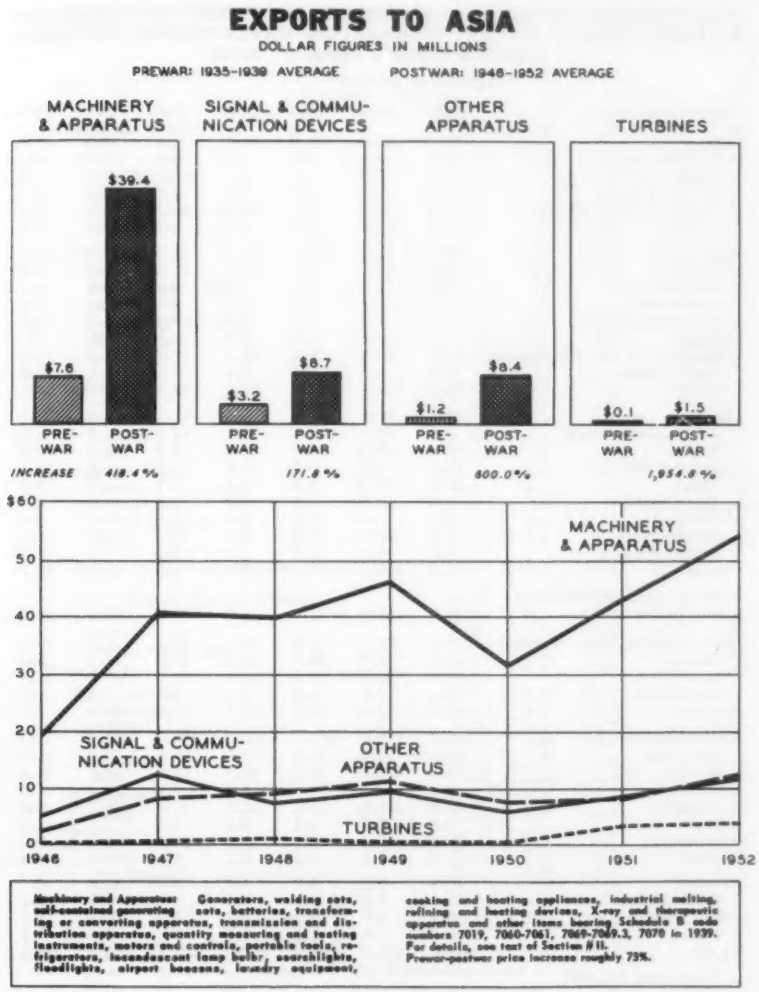
DOLLAR FIGURES IN MILLIONS

PREWAR: 1935–1939 AVERAGE POSTWAR: 1946–1952 AVERAGE





Machinery and Apparatus: Generators, welding sets, self-contained generating sets, batteries, transforming or converting apparatus, transmission and distribution apparatus, quantity measuring and testing instruments, motors and controls, portable tools, refrigerators, incandescent lamp bulbs, searchlights, floodlights, airport beacons, laundry equipment, cooking and heating appliances, industrial melting, refining and heating devices, X-ray and therapeutic apparatus and other items bearing Schedule B code numbers 7019, 7060-7061, 7069-7069.2, 7070 in 1939. For details, see text of Section #11.
Prewar-postwar price increase roughly 75%.



Machinery and Apparatus: Generators, welding sets, self-contained generating sets, batteries, transforming or converting apparatus, transmission and distribution apparatus, quantity measuring and testing instruments, motors and controls, portable tools, refrigerators, incandescent lamp bulbs, searchlights, floodlights, airport beacons, laundry equipment, cooking and heating appliances, industrial melting, refining and heating devices, X-ray and therapeutic apparatus and other items bearing Schedule B code numbers 7019, 7060-7061, 7069-7069.3, 7070 in 1939. For details, see text of Section 811.
Prewar-postwar price increase roughly 75%.

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS INCLUDING STEAM ENGINES, TURBINES AND WATER WHEELS AND PARTS (Excluding "Special Category" Items)

Millions of Dollars

Area and country	1952	1951	1950	1949	1948	1947	1946
Africa	21.8	19.6	15.2	26.4	41.0	37.5	17.2
Belgian Congo	4.5	2.4	2.4	3.1	3.0	1.9	0.9
Egypt	2.4	2.7	1.7	3.7	1.1	2.5	0.8
French Morocco	1.2	1.2	0.8	0.9	1.0	1.3	0.7
Union of South Africa	9.5	8.3	6.4	13.3	31.2	25.3	10.3
Other	4.2	5.0	3.9	5.4	4.7	6.6	4.6
Asia	82.3	61.1	45.9	73.9	61.6	65.5	29.6
India	12.3	11.7	4.3	12.8	11.5	13.9	3.2
Indo-China	7.7	4.9	1.2	0.8	0.8	0.7	0.3
Indonesia	7.7	4.5	2.9	5.8	3.1	2.3	1.2
Israel-Palestine	7.1	7.9	5.0	4.8	2.0	1.0	0.4
Japan	6.3	2.6	1.2	0.6	0.4	0.1	a
Republic of the Philippines	14.6	12.0	12.4	18.4	17.0	13.9	5.8
Saudi Arabia	7.1	3.0	1.7	6.0	4.6	3.1	0.6
Other	19.7	14.6	17.2	24.7	22.4	30.6	18.1
Europe	94.3	82.6	72.9	79.5	77.1	100.9	74.8
Belgium-Luxembourg	8.0	10.0	10.9	14.0	11.2	9.3	1.9
France	16.4	18.3	17.4	13.8	6.8	9.3	5.6
Germany (West)	1.5	0.9	0.8	0.6	0.4	0.1	0.1
Italy	22.8	17.3	6.9	6.5	1.7	1.3	0.3
Netherlands	7.8	2.8	2.3	4.4	3.6	4.0	2.5
Sweden	3.0	3.6	2.9	3.4	4.4	13.1	3.6
Switzerland	4.2	5.1	4.8	4.6	6.2	4.9	1.1
United Kingdom	4.7	3.1	2.9	3.9	5.9	7.7	2.7
Other	25.9	21.4	24.1	28.3	36.8	51.3	56.9
Canada (incl. Newfoundland and Labrador)	166.7	122.6	77.0	76.6	77.2	96.6	59.0
North America (Excl. Canada)	103.7	89.3	71.4	70.0	83.1	90.4	49.0
Cuba	36.9	32.3	24.4	18.9	26.0	21.4	8.8
Mexico	44.7	38.2	29.8	31.5	37.8	50.3	31.1
Canal Zone	2.1	2.0	1.9	1.9	1.8	1.3	1.0
Other	20.0	16.8	15.3	17.7	17.6	17.4	8.1
South America	135.2	155.2	101.7	119.1	154.7	170.3	79.7
Argentina	10.1	19.6	14.1	11.0	38.6	49.2	13.0
Brazil	41.3	63.0	30.3	34.3	47.1	58.6	33.1
Chile	12.5	11.9	6.6	14.1	8.6	10.4	6.8
Colombia	20.9	15.9	15.1	11.5	15.3	14.7	9.0
Peru	8.8	7.6	4.1	4.5	4.6	5.0	3.0
Venezuela	34.0	28.3	26.3	35.6	31.1	21.6	9.7
Other	7.6	8.9	5.2	8.1	9.5	10.7	5.1
Oceania	12.4	6.3	4.3	6.0	5.1	12.7	3.6
Australia	11.1	4.9	3.4	4.5	3.4	6.1	2.2
New Zealand	0.9	1.0	0.6	1.1	1.6	6.2	1.1
Other	0.4	0.4	0.3	0.4	0.2	0.5	0.3
Total	616.4	536.6	388.2	451.5	499.8	573.9	312.9

a Less than $50,000

Sources: Bureau of the Census; The Conference Board

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS INCLUDING STEAM ENGINES, TURBINES, WATER WHEELS AND PARTS BY AREA AND COUNTRY

Millions of Dollars

Area and country	1939	1938	1937	1936	1935
Africa	7.1	9.7	11.4	9.9	8.0
Belgian Congo	.1	.2	.1	.1	.1
Egypt	.3	.5	.5	.5	.6
Union of South Africa	5.4	7.5	9.0	7.6	5.6
Other	1.2	1.5	1.9	1.8	1.7
Asia	13.4	12.2	13.1	10.8	10.2
China	1.0	.8	1.2	1.6	1.4
Netherlands Indies	1.2	.7	.7	.5	.8
Japan	1.0	.9	1.0	.8	.7
Philippine Islands	3.5	2.8	3.1	2.1	1.6
British India	3.0	2.5	3.1	2.6	2.6
Other	3.9	4.4	4.1	3.1	3.1
Europe	26.2	25.6	25.4	23.8	20.7
Belgium	1.1	1.5	1.8	1.4	1.5
France	1.8	2.4	3.3	3.2	3.2
Germany	.1	.1	.2	.1	.3
Italy	.5	.9	.7	.6	.7
Netherlands	1.5	1.4	1.4	1.2	1.2
Sweden	2.9	2.1	1.7	1.1	.9
Switzerland	.5	.5	.4	.5	.5
United Kingdom	11.7	9.9	9.9	10.1	6.9
Other	6.1	6.9	5.9	5.6	5.5
Canada (incl. Newfoundland and Labrador)	18.8	16.3	19.0	13.8	8.9
North America (excl. Canada)	11.9	10.9	15.7	11.9	10.1
Cuba	2.9	2.8	3.9	2.9	2.1
Mexico	4.4	3.3	7.5	5.6	4.5
Panama Canal Zone	.9	.6	1.2a	1.0a	1.1a
Other	3.7	4.2	3.1	2.3	2.3
South America	24.0	22.9	24.1	17.2	14.5
Argentina	4.3	4.7	6.5	4.4	3.4
Brazil	9.0	7.2	6.7	5.4	4.5
Chile	1.7	1.9	2.4	1.4	1.1
Colombia	3.3	2.8	2.8	2.3	2.4
Peru	.8	1.0	1.2	1.1	1.0
Venezuela	3.7	4.1	2.8	1.4	1.3
Other	1.2	1.2	1.8	1.3	.8
Oceania	4.2	4.9	4.5	4.3	4.0
Australia	3.1	2.9	2.3	2.6	2.6
New Zealand	1.0	2.0	2.2	1.6	1.3
Other	.1	.1	.1	.1	.1
Total	105.5	102.5	113.3	91.6	76.5

a Includes the Republic of Panama

Sources: Bureau of the Census; The Conference Board

TOTAL U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS
1946-1952

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Machinery and appliances	409.1	362.1	265.1	287.0	302.9	334.3	195.7
Generators (700000-700807, 701200)	35.5	31.9	19.8	24.8	23.4	52.3	31.0
Welding sets (701012-701032)	9.6	6.2	4.6	5.6	5.7	8.5	7.2
Self-contained generating sets (701105-701150)	45.0	26.6	20.3	25.6	28.7	8.7	21.2
Batteries (701300-701800)	23.1	27.0	16.8	20.7	18.7	17.3	11.6
Transforming or converting apparatus (702110-702810)	32.2	25.8	23.5	24.0	19.9	20.9	9.8
Transmission and distribution apparatus (703110-703470)	37.1	23.4	21.8	25.7	23.1	21.1	9.1
Quantity measuring and testing instruments (703500-703850)	16.9	13.4	9.0	9.2	9.3	10.8	6.1
Motors and controls (704000-705560)	57.1	47.5	41.1	47.5	50.7	45.7	29.0
Portable tools (705607-705705)	7.8	7.0	5.1	5.5	7.9	9.5	5.1
Refrigerators, freezers and refrigerating systems (705715-705760)	82.4	84.9	46.8	39.2	49.7	50.6	22.8
Bulbs, lamps and tubes (706305-706590)	12.5	14.7	11.3	10.7	10.8	12.4	7.6
Searchlights, floodlights and airport beacons (706600)	...	...	...	.3	.6	1.1	.5
Laundry equipment (706812-706820, 707100)	12.2	13.6	10.8	10.0	10.7	14.8	3.6
Cooking and heating appliances (707200-707395)	9.5	8.0	5.9	6.2	7.0	9.1	4.7
Industrial melting, refining, and heating devices (707415-707492)	5.4	7.2	6.4	5.8	5.5	9.5	6.8
X-Ray and therapeutic apparatus (707505-707590)	9.5	11.7	11.1	13.9	15.6	22.8	10.4
Other (701910, 706000, 706100, 706910-707050)	13.5	13.3	10.7	11.8	15.1	19.2	9.1

(Continued on following page)

TOTAL U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS
1946-1952 (Continued)

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Signal and communication apparatus	109.9	97.1	64.0	58.9	82.0	121.3	53.4
Radio and television broadcast station transmitting equipment (707607)	8.7	...	...	...	...	...	...
Radio, radio-phonograph receiving sets (707705-707719)	8.7	26.4	15.7	15.4	28.1	53.5	23.2
Television receiving sets (707721)	16.8	...	...	...	...	...	...
Radio and television receiving tubes (707805, 707812-707815)	13.3	14.6	6.1	6.5	7.3	13.4	4.7
Radio and television cpaacitors, resistors, inductors and receiving set components (707905-707918, 708100)	21.6	24.2	12.8	12.9	12.5	18.7	10.6
Telegraph apparatus (708500)	8.4	4.6	3.7	3.1	3.4	3.1	2.2
Telephone equipment and instruments (708600-708700)	21.6	18.9	20.6	16.9	27.9	25.4	10.5
Other (707635, 708000, 708800-708900)	10.2	8.3	5.2	4.3	2.7	7.1	2.2
Other apparatus	85.9	68.4	50.6	66.6	73.8	84.6	39.9
Starting, lighting, and ignition equipment 709220)	24.3	19.6	14.1	13.8	10.9	13.3	6.4
Conduit, metal and nonmetal fittings, outlets and switch boxes (709419-709490)	9.6	9.9	5.0	9.3	14.1	5.2	5.1
Lighting fixture, portable lamps and parts (709605-709690)	10.3	9.1	7.0	10.2	14.1	22.2	6.4
Other (709030, 709495, 709500, 709810-709920)	41.7	29.4	24.1	33.1	34.2	44.1	21.8
Turbines, steam engines and water wheels (711110-711900)	11.4	10.2	8.6	6.4	13.1	11.2	4.7
Grand total	615.4	537.8	388.3	419.2	470.6	551.5	293.7

Note: Parts and accessories are included in the above data. (1) Schedule B as revised January 1, 1952.
Source: Bureau of the Census

TOTAL U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS 1935-1939

Millions of Dollars

Items and Schedule B Commodity Numbers	1939	1938	1937	1936	1935
Machinery and appliances	61.7	59.9	62.6	49.8	38.9
Generators (7000-7009, 7012)	4.9	3.6	2.6	1.6	1.4
Welding sets (7010-7010.2)	0.9	1.0	1.0	0.6	0.5
Self-contained generating sets (7011)	1.5	1.5	1.7	0.7	0.3
Batteries (7013-7018)	6.3	4.8	6.6	5.0	4.4
Transforming or converting apparatus (7021-7029)	2.8	2.7	2.5	1.9	1.3
Transmission and distribution apparatus (7030-7034, 7039)	3.2	3.4	3.0	2.2	1.8
Quantity measuring and testing instruments (7035-7038)	2.9	3.0	3.2	2.1	1.9
Motors and controls (7040-7055)	7.4	7.5	8.4	6.9	5.1
Portable tools (7056)	1.6	1.3	1.3	1.0	.9
Refrigerators (7057-7059)	17.4	17.9	20.6	19.2	15.3
Incandescent lamp bulbs (7063-7065)	1.7	1.4	1.7	1.4	1.1
Searchlights, floodlights and airport beacons (7066-7067)	0.4	0.5	0.1	0.1	...
Laundry equipment (7068-7068.3, 7071)	2.6	3.1	2.6	1.3	0.6
Cooking and heating appliances (7072-7073.5)	1.0	1.0	1.2	1.0	0.7
Industrial melting, refining and heating devices (7074.0-7074.9)	1.7	2.1	0.9	0.6	0.3
X-Ray and therapeutic apparatus (7075-7075.9)	2.2	2.0	2.1	1.5	1.4
Other (7019, 7060-7061, 7069-7069.3, 7070)	2.7	2.9	3.1	2.7	1.8
Signal and communication apparatus	26.1	27.5	36.2	30.7	27.6
Radio apparatus (7076, 7078-7081)	11.8	12.6	16.0	12.1	10.0
Radio receiving sets (7077)	10.3	10.6	16.1	16.1	15.6
Telegraph apparatus (7082)	0.2	0.2	0.4	0.2	0.1
Telephone apparatus (7083-7087)	3.4	3.6	3.2	1.9	2.0
Other (7089)	0.2	0.1	0.1	0.1	0.1
Other apparatus	17.5	14.8	14.0	10.9	9.4
Starting, lighting and ignition equipment (7092)	1.2	1.3	1.5	1.4	1.3
Conduit, metal and nonmetal fittings, outlets and switch boxes (7094-7095)	2.7	2.0	2.1	1.6	1.3
Lighting fixtures, portable lamps and parts (7096-7097)	1.6	1.3	1.3	1.3	1.0
Other (7093, 7098-7099.9)	12.1	10.0	9.0	6.8	5.9
Turbines, steam engines and water wheels (7111, 7113, 7163)	0.3	0.4	0.7	0.2	0.3
Grand total	105.6	102.5	113.2	91.7	76.4

Note: Parts and accessories are included in the above data
Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO AFRICA, 1946-1952

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Machinery and appliances	16.5	14.8	12.4	19.4	28.3	22.0	10.4
Generators (700000-700807, 701200)	0.2	0.4	0.4	1.8	0.8	1.8	0.6
Welding sets (701012-701032)	0.7	0.3	0.3	0.4	0.6	0.7	0.4
Self-contained generating sets (701105-701150)	1.5	1.1	1.5	2.4	2.8	1.5	0.9
Batteries (701300-701800)	0.9	0.9	0.9	1.2	1.7	1.9	1.3
Transforming or converting apparatus (702110-702810)	0.9	0.5	1.2	1.1	0.7	1.0	0.6
Transmission and distribution apparatus (703110-703470)	1.8	0.9	1.2	1.8	1.0	0.8	0.5
Quantity measuring and testing instruments (703500-703850)	0.3	0.5	0.5	0.4	0.5	0.5	0.3
Motors and controls (704000-705560)	3.8	2.0	2.5	4.9	3.1	1.7	1.0
Portable tools (705607-705705)	0.2	0.2	0.1	0.2	0.6	0.5	0.3
Refrigerators, freezers and refrigerating systems (705715-705760)	4.1	5.6	2.3	2.8	10.0	6.6	2.1
Bulbs, lamps and tubes (706305-706590)	0.5	0.7	0.4	0.6	0.9	0.8	0.5
Searchlights, floodlights and airport beacons (706600)	...	...	...	a	a	a	a
Laundry equipment (706812-706820, 707100)	0.2	0.4	0.1	0.3	2.2	0.7	0.1
Cooking and heating appliances (707200-707395)	0.4	0.3	0.1	0.3	0.9	0.6	0.4
Industrial melting, refining, and heating devices (707415-707492)	0.1	0.1	0.2	0.2	0.3	0.4	0.3
X-Ray and therapeutic apparatus (707505-707590)	0.3	0.4	0.5	0.6	0.7	0.9	0.4
Other (701910, 706000, 706100, 706910-707050)	0.5	0.5	0.2	0.4	1.4	1.6	0.6

(Continued on following page)

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO AFRICA 1946-1952 (Continued)

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Signal and communication apparatus	1.5	1.4	0.9	1.6	5.4	7.4	2.7
Radio and television broadcast station transmitting equipment (707607)	0.1	...	...	...	...	...	...
Radio, radio-phonograph receiving sets (707705-707719)	0.2	0.4	0.3	0.8	4.3	5.4	1.5
Television receiving sets (707721)	...	...	...	...	...	...	...
Radio and television receiving tubes (707805, 707812-707815)	0.4	0.3	0.2	0.3	0.3	0.5	0.2
Radio and television capacitors, resistors, inductors and receiving set components (707905-707918, 708100)	0.2	0.2	0.1	0.3	0.4	0.6	0.4
Telegraph apparatus (708500)	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Telephone equipment and instruments (708600-708700)	0.1	a	a	0.1	0.2	0.6	0.4
Other (707635, 708000, 708800-708900)	0.4	0.3	0.1	0.1	0.1	0.2	0.1
Other apparatus	3.4	2.9	1.8	3.2	5.9	6.6	2.7
Starting, lighting, and ignition equipment (709220)	1.8	1.5	0.9	1.2	0.7	1.3	0.4
Conduit, metal and nonmetal fittings, outlets and switch boxes (709419-709490)	0.1	a	a	0.1	0.6	0.2	0.2
Lighting fixtures, portable lamps and parts (709605-709690)	0.3	0.3	0.2	0.7	1.7	2.4	0.4
Other (709030, 709495, 709500, 709810-709920)	1.2	1.0	0.6	1.1	2.8	2.8	1.6
Turbines, steam engines and water wheels (711110-711900)	0.2	0.3	0.1	0.2	0.1	0.4	0.1
Grand total	21.6	19.4	15.2	24.5	39.7	36.5	15.9

Note: Parts and accessories are included in the above data. (1) Schedule B as revised January 1, 1952.
a. Less than $50,000

Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO AFRICA, 1935-1939

Millions of Dollars

Items and Schedule B Commodity Numbers	1939	1938	1937	1936	1935
Machinery and appliances	4.5	6.6	7.8	6.1	4.7
Generators (7000-7009, 7012)	0.1	0.1	a	0.1	a
Welding sets (7010-7010.2)	a	a	a	a	a
Self-contained generating sets (7011)	0.2	0.2	0.3	0.1	0.1
Batteries (7013-7018)	0.7	0.8	1.2	0.8	0.7
Transforming or converting apparatus (7021-7029)	0.1	0.3	0.2	0.1	0.1
Transmission and distribution apparatus (7030-7034, 7039)	0.2	0.2	0.3	0.2	0.4
Quantity measuring and testing instruments (7035-7038)	0.1	0.1	0.1	0.1	0.1
Motors and controls (7040-7055)	0.3	0.9	1.0	1.1	0.5
Portable tools (7056)	0.1	0.1	0.1	0.1	a
Refrigerators (7057-7059)	1.9	2.8	3.5	3.0	2.5
Incandescent lamp bulbs (7063-7065)	0.1	0.1	0.1	0.1	a
Searchlights, floodlights and airport beacons (7066-7067)	a	a	a	a	a
Laundry equipment (7068-7068.3, 7071)	0.4	0.6	0.4	0.1	0.1
Cooking and heating appliances (7072-7073.5)	0.1	0.2	0.2	0.2	0.1
Industrial melting, refining and heating devices (7074.0-7074.9)	a	a	0.1	a	a
X-Ray and therapeutic apparatus (7075-7075.9)	0.1	0.1	0.1	0.1	0.1
Other (7019, 7060-7061, 7069-7069.3, 7070)	0.2	0.2	0.2	0.1	0.1
Signal and communication apparatus	1.9	2.5	3.0	3.2	2.9
Radio apparatus (7076, 7078-7081)	0.4	0.4	0.4	0.3	0.2
Radio receiving sets (7077)	1.5	2.0	2.5	2.8	2.6
Telegraph apparatus (7082)	a	a	a	a	a
Telephone apparatus (7083-7087)	a	a	a	0.1	a
Other (7089)	a	a	a	a	a
Other apparatus	0.7	0.6	0.7	0.6	0.4
Starting, lighting and ignition equipment (7092)	0.1	0.1	0.1	0.1	0.1
Conduit, metal and nonmetal fittings, outlets and switch boxes (7094-7095)	0.1	0.1	0.1	0.1	a
Lighting fixtures, portable lamps and parts (7096-7097)	0.1	0.1	0.1	0.1	0.1
Other (7093, 7098-7099.9)	0.5	0.4	0.4	0.3	0.2
Turbines, steam engines and water wheels (7111, 7113, 7163)	...	a	a	a	a
Grand total	7.1	9.7	11.4	9.9	8.0

Note: Parts and accessories are included in the above data

a Less than $50,000

Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO ASIA, 1946-1952

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Machinery and appliances	54.2	43.4	31.7	46.1	39.9	40.9	19.6
Generators (700000-700807, 701200)	6.6	5.9	3.2	3.9	2.7	8.7	5.8
Welding sets (701012-701032)	1.3	0.5	0.3	1.0	0.8	0.6	0.4
Self-contained generating sets (701105-701150)	9.3	3.9	4.1	6.1	4.9	0.6	1.8
Batteries (701300-701800)	7.8	9.4	4.9	7.0	5.6	4.9	2.7
Transforming or converting apparatus (702110-702810)	4.3	3.1	2.4	2.9	2.7	1.5	0.9
Transmission and distribution apparatus (703110-703470)	6.2	2.3	2.6	3.9	2.6	2.3	0.5
Quantity measuring and testing instruments (703500-703850)	1.9	1.7	1.2	1.5	1.5	1.2	0.5
Motors and controls (704000-705560)	4.2	2.9	2.6	5.4	5.8	4.1	1.0
Portable tools (705607-705705)	0.4	0.3	0.3	0.4	0.6	0.4	0.2
Refrigerators, freezers and refrigerating systems (705715-705760)	6.0	6.9	3.8	5.6	4.9	5.0	1.9
Bulbs, lamps and tubes (706305-706590)	2.0	2.5	2.5	2.5	1.8	2.3	1.2
Searchlights, floodlights and airport beacons (706600)	...	...	...	0.1	0.1	0.1	0.1
Laundry equipment (706812-706820, 707100)	0.4	0.3	0.4	0.7	0.3	0.3	0.3
Cooking and heating appliances (707200-707395)	0.6	0.7	0.4	0.7	0.7	0.8	0.8
Industrial melting, refining, and heating devices (707415-707492)	0.5	0.4	0.2	0.5	0.5	1.5	0.3
X-Ray and therapeutic apparatus (707505-707590)	1.4	1.5	1.6	1.7	2.3	4.4	0.6
Other (701910, 706000, 706100, 706910-707050)	1.3	1.1	1.3	2.1	2.0	2.1	0.7

(Continued on following page)

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO ASIA, 1946-1952 (Continued)

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Signal and communication apparatus	11.5	8.5	6.0	9.4	7.7	12.5	5.1
Radio and television broadcast station transmitting equipment (707607)	1.8	...	...	...	...	...	...
Radio, radio-phonograph receiving sets (707705-707719)	1.0	2.5	2.2	4.9	4.2	8.1	3.7
Television receiving sets (707721)	0.2	...	...	...	...	...	...
Radio and television receiving tubes (707805, 707812-707815)	1.1	0.9	0.6	1.0	1.0	0.7	0.2
Radio and television capacitors, resistors, inductors and receiving set components (707905-707918, 708100)	0.9	0.9	0.6	1.4	1.0	1.2	0.6
Telegraph apparatus (708500)	1.0	0.5	0.6	0.1	0.4	0.3	0.2
Telephone equipment and instruments (708600-708700)	3.7	2.9	1.3	1.2	0.9	1.3	0.3
Other (707635, 708000, 708800-708900)	1.8	0.8	0.8	0.8	0.3	1.0	0.1
Other apparatus	12.6	7.8	7.6	11.0	9.1	8.4	2.5
Starting, lighting, and ignition equipment (709220)	3.7	2.5	2.1	2.2	1.5	1.4	0.3
Conduit, metal and nonmetal fittings, outlets and switch boxes (709419-709490)	1.5	0.7	0.7	1.4	1.7	0.4	0.2
Lighting fixtures, portable lamps and parts (709605-709690)	1.2	1.1	0.8	1.9	2.2	2.4	0.4
Other (709030, 709495, 709500, 709810-709920)	6.3	3.4	4.0	5.5	3.7	4.2	1.5
Turbines, steam engines and water wheels (711110-711900)	3.7	3.6	0.5	0.5	1.3	0.8	0.3
Grand total	82.1	63.2	45.9	67.1	58.0	62.6	27.5

Note: Parts and accessories are included in the above data. (1) Schedule B as revised January 1, 1952.
a. Less than $50,000

Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO ASIA (1), 1935-1939

Millions of Dollars

Items and Schedule B Commodity Numbers	1939	1938	1937	1936	1935
Machinery and appliances	8.7	7.9	8.1	6.7	6.4
Generators (7000-7009, 7012)	0.7	0.4	0.3	0.2	0.3
Welding sets (7010-7010.2)	0.1	0.3	0.2	0.1	0.1
Self-contained generating sets (7011)	0.5	0.4	0.2	0.1	a
Batteries (7013-7018)	2.1	1.7	2.4	1.8	1.7
Transforming or converting apparatus (7021-7029)	0.3	0.4	0.3	0.2	0.2
Transmission and distribution apparatus (7030-7034, 7039)	0.3	0.4	0.4	0.3	0.2
Quantity measuring and testing instruments (7035-7038)	0.3	0.3	0.4	0.2	0.3
Motors and controls (7040-7055)	0.9	0.7	0.6	0.5	0.5
Portable tools (7056)	0.1	a	0.1	0.1	0.1
Refrigerators (7057-7059)	2.0	1.8	2.1	2.2	2.2
Incandescent lamp bulbs (7063-7065)	0.3	0.2	0.3	0.2	0.2
Searchlights, floodlights and airport beacons (7066-7067)	a	0.5	0.1	a	a
Laundry equipment (7068-7068.3, 7071)	a	a	a	a	a
Cooking and heating appliances (7072-7073.5)	0.1	0.1	0.1	0.1	0.1
Industrial melting, refining and heating devices (7074.0-7074.9)	0.3	0.1	0.1	0.1	0.1
X-Ray and therapeutic apparatus (7075-7075.9)	0.2	0.2	0.2	0.1	0.2
Other (7019, 7060-7061, 7069-7069.3, 7070)	0.3	0.3	0.5	0.4	0.4
Signal and communication apparatus	3.2	3.1	3.7	3.1	2.7
Radio apparatus (7076, 7078-7081)	1.1	1.3	1.2	1.1	0.8
Radio receiving sets (7077)	1.6	1.4	1.9	1.7	1.7
Telegraph apparatus (7082)	a	a	a	a	a
Telephone apparatus (7083-7087)	0.4	0.3	0.5	0.2	0.3
Other (7089)	a	a	a	a	a
Other apparatus	1.5	1.1	1.2	1.0	1.0
Starting, lighting and ignition equipment (7092)	0.1	0.1	0.2	0.2	0.2
Conduit, metal and nonmetal fittings, outlets and switch boxes (7094-7095)	0.3	0.2	0.2	0.2	0.1
Lighting fixtures, portable lamps and parts (7096-7097)	0.2	0.1	0.1	0.1	0.1
Other (7093, 7098-7099.9)	0.9	0.7	0.6	0.5	0.6
Turbines, steam engines and water wheels (7111, 7113, 7163)	a	0.1	0.1	a	a
Grand total	13.4	12.2	13.1	10.8	10.2

Note: Parts and accessories are included in the above data
a Less than $50,000

(1) Including Turkey
Source: Bureau of the Census

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U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO EUROPE, 1946-1952

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Machinery and appliances	64.2	64.0	56.5	49.6	43.7	61.8	57.1
Generators (700000-700807, 701200)	9.0	11.7	4.5	3.1	4.5	10.5	18.8
Welding sets (701012-701032)	1.4	1.1	0.9	1.3	1.2	1.8	2.7
Self-contained generating sets (701105-701150)	8.2	2.2	2.0	3.3	3.6	0.4	6.0
Batteries (701300-701800)	1.7	2.2	1.0	2.3	1.5	1.8	1.6
Transforming or converting apparatus (702110-702810)	6.3	9.1	6.5	5.1	2.2	5.0	2.0
Transmission and distribution apparatus (703110-703470)	5.8	4.6	5.1	3.2	2.1	3.5	1.8
Quantity measuring and testing instruments (703500-703850)	5.9	3.5	2.7	2.4	2.0	3.7	1.8
Motors and controls (704000-705560)	11.9	8.8	14.5	11.4	10.8	11.8	11.6
Portable tools (705607-705705)	0.9	0.9	1.0	1.2	1.8	2.5	0.7
Refrigerators, freezers and refrigerating systems (705715-705760)	5.8	8.5	6.7	4.5	4.5	5.4	1.7
Bulbs, lamps and tubes (706305-706590)	2.2	2.6	2.2	2.5	1.7	1.4	0.7
Searchlights, floodlights and airport beacons (706600)	...	...	...	a	0.1	0.1	0.1
Laundry equipment (706812-706820, 707100)	1.7	2.1	2.5	1.7	1.1	1.0	0.1
Cooking and heating appliances (707200-707395)	0.3	0.2	0.2	0.2	0.3	0.7	0.2
Industrial melting, refining, and heating devices (707415-707492)	0.8	2.7	3.2	1.8	1.1	3.3	3.6
X-Ray and therapeutic apparatus (707505-707590)	1.5	2.5	2.5	4.5	4.4	8.1	3.4
Other (701910, 706000, 706100, 706910-707050)	0.9	1.2	1.1	1.1	0.8	0.8	0.3

(Continued on following page)

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO EUROPE, 1946-1952 (Continued)

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Signal and communication apparatus	16.1	8.7	6.2	9.4	10.1	16.2	4.8
Radio and television broadcast station transmitting equipment (707607)	1.4	...	...	...	...	...	...
Radio, radio-phonograph receiving sets (707705-707719)	0.2	1.0	1.0	1.6	3.2	4.3	0.9
Television receiving sets (707721)	0.7	..	...	...	...	...	...
Radio and television receiving tubes (707805, 707812-707815)	2.8	2.4	1.1	1.4	1.4	3.8	1.1
Radio and television capacitors, resistors, inductors and receiving set components (707905-707918, 708100)	2.0	1.9	1.3	1.4	1.9	2.7	0.9
Telegraph apparatus (708500)	2.3	0.8	0.7	1.0	0.5	0.7	0.5
Telephone equipment and instruments (708600-708700)	4.5	1.7	1.5	3.1	2.9	3.9	1.4
Other (707635, 708000, 708800-708900)	2.3	0.9	0.7	0.9	0.2	0.8	0.1
Other apparatus	11.7	8.2	6.9	11.8	10.2	14.6	5.9
Starting, lighting, and ignition equipment (709220)	3.1	3.2	2.8	2.8	2.1	3.0	1.5
Conduit, metal and nonmetal fittings, outlets and switch boxes (709419-709490)	0.4	0.3	0.2	0.3	0.3	0.2	0.2
Lighting fixtures, portable lamps and parts (709605-709690)	0.9	1.1	0.7	2.1	2.8	4.5	0.3
Other (709030, 709495, 709500, 709810-709920)	7.4	3.6	3.1	0.7	4.9	0.7	3.9
Turbines, steam engines and water wheels (711110-711900)	2.1	1.3	3.2	0.8	0.8	2.6	0.9
Grand total	94.1	82.2	72.8	71.6	64.8	95.2	68.7

Note: Parts and accessories are included in the above data. (1) Schedule B as revised January 1, 1952.
a. Less than $50,000

Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO EUROPE (1), 1935-1939

Millions of Dollars

Items and Schedule B Commodity Numbers	1939	1938	1937	1936	1935
Machinery and appliances	14.3	14.5	13.9	13.6	10.2
Generators (7000-7009, 7012)	0.4	0.3	0.4	0.2	0.2
Welding sets (7010-7010.2)	0.2	0.3	0.2	0.2	0.1
Self-contained generating sets (7011)	0.2	0.2	0.2	0.1	0.1
Batteries (7013-7018)	1.4	0.3	0.4	0.3	0.3
Transforming or converting apparatus (7021-7029)	0.7	0.3	0.3	0.3	0.1
Transmission and distribution apparatus (7030-7034, 7039)	0.4	0.3	0.3	0.3	0.2
Quantity measuring and testing instruments (7035-7038)	1.0	1.2	1.0	0.8	0.7
Motors and controls (7040-7055)	1.8	1.4	1.5	1.5	1.1
Portable tools (7056)	0.6	0.6	0.5	0.4	0.5
Refrigerators (7057-7059)	4.3	5.1	6.3	7.5	5.7
Incandescent lamp bulbs (7063-7065)	0.1	0.1	0.1	0.1	a
Searchlights, floodlights and airport beacons (7066-7067)	0.2	a	a	0.1	a
Laundry equipment (7068-7068.3, 7071)	0.9	1.2	0.9	0.4	0.2
Cooking and heating appliances (7072-7073.5)	0.1	0.1	0.1	0.1	0.1
Industrial melting, refining and heating devices (7074.0-7074.9)	1.0	1.7	0.3	0.2	0.2
X-Ray and therapeutic apparatus (7075-7075.9)	0.5	0.6	0.5	0.4	0.3
Other (7019, 7060-7061, 7069-7069.3, 7070)	0.5	0.8	0.8	0.8	0.4
Signal and communication apparatus	6.3	6.4	8.9	8.0	8.3
Radio apparatus (7076, 7078-7081)	3.6	4.0	5.6	4.1	3.6
Radio receiving sets (7077)	2.0	2.0	2.8	3.7	4.5
Telegraph apparatus (7082)	0.1	0.1	0.2	0.1	0.1
Telephone apparatus (7083-7087)	0.6	0.3	0.2	0.1	0.2
Other (7089)	a	a	a	a	a
Other apparatus	5.6	4.7	2.6	2.2	2.2
Starting, lighting and ignition equipment (7092)	0.2	0.4	0.5	0.5	0.5
Conduit, metal and nonmetal fittings, outlets and switch boxes (7094-7095)	0.3	0.4	0.2	0.1	0.3
Lighting fixtures, portable lamps and parts (7096-7097)	0.1	a	a	0.1	0.1
Other (7093, 7098-7099.9)	5.0	3.8	1.9	1.5	1.3
Turbines, steam engines and water wheels (7111, 7113, 7163)	a	a	a	a	a
Grand total	26.2	25.6	25.4	23.8	20.7

Note: Parts and accessories are included in the above data
a Less than $50,000

(1) Excluding Turkey
Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO CANADA (1), 1946-1952

Millions of Dollars

Items and Schedule B commodity numbers (2)	1952	1951	1950	1949	1948	1947	1946
Machinery and appliances	114.4	81.7	51.3	45.0	41.5	53.3	31.5
Generators (700000-700807, 701200)	4.7	4.2	2.5	3.7	2.5	2.7	1.0
Welding sets (701012-701032)	3.0	1.7	1.3	1.1	1.3	1.5	1.3
Self-contained generating sets (701105-701150)	3.8	2.8	1.3	1.7	2.4	1.2	2.1
Batteries (701300-701800)	1.7	1.2	0.6	1.0	0.7	0.9	0.8
Transforming or converting apparatus (702110-702810)	5.4	3.0	1.8	1.4	1.7	1.3	1.1
Transmission and distribution apparatus (703110-703470)	8.2	5.6	3.3	3.4	3.2	3.1	1.6
Quantity measuring and testing instruments (703500-703850)	5.4	3.3	2.3	2.1	2.0	1.8	1.5
Motors and controls (704000-705560)	17.8	17.2	10.3	9.1	9.5	8.8	5.2
Portable tools (705607-705705)	4.0	2.9	2.3	2.2	2.6	2.8	1.9
Refrigerators, freezers and refrigerating systems (705715-705760)	38.7	21.8	11.7	6.5	4.3	8.8	5.5
Bulbs, lamps and tubes (706305-706590)	2.6	2.3	1.4	1.0	0.7	1.5	0.9
Searchlights, floodlights and airport beacons (706600)	...	...	...	a	0.1	0.2	0.1
Laundry equipment (706812-706820, 707100)	4.2	3.5	2.7	2.1	1.7	6.4	1.3
Cooking and heating appliances (707200-707395)	5.3	3.5	3.1	3.0	2.5	3.3	1.6
Industrial melting, refining, and heating devices (707415-707492)	2.4	2.5	1.5	1.4	1.5	1.5	1.1
X-Ray and therapeutic apparatus (707505-707590)	2.7	2.7	2.3	2.6	2.2	2.4	1.8
Other (701910, 706000, 706100, 706910-707050)	4.7	3.6	2.9	2.4	2.6	5.3	2.7

(Continued on following page)

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO CANADA (1), 1946-1952 (Continued)

Millions of Dollars

Items and Schedule B commodity numbers (2)	1952	1951	1950	1949	1948	1947	1946
Signal and communication apparatus	29.9	20.2	13.3	12.3	11.9	18.2	10.1
Radio and television broadcast station transmitting equipment (707607)	1.7	...	...	...	...	...	...
Radio, radio-phonograph receiving sets (707705-707719)	0.3	0.6	0.2	0.5	0.6	2.7	1.2
Television receiving sets (707721)	0.7	...	...	...	...	...	...
Radio and television receiving tubes (707805, 707812-707815)	3.4	1.9	1.2	1.1	0.8	1.7	0.7
Radio and television capacitors, resistors, inductors and receiving set components (707905-707918, 708100)	12.7	8.8	5.5	4.7	3.5	4.6	3.8
Telegraph apparatus (708500)	3.0	1.9	0.9	1.1	1.6	0.8	0.6
Telephone equipment and instruments (708600-708700)	6.1	5.7	4.4	4.0	4.7	6.2	2.9
Other (707635, 708000, 708800-708900)	2.1	1.4	1.1	1.0	0.6	2.2	0.9
Other apparatus	20.6	18.5	10.8	12.0	19.3	20.7	12.9
Starting, lighting, and ignition equipment (709220)	6.6	3.9	3.0	2.8	2.6	2.6	1.6
Conduit, metal and nonmetal fittings, outlets and switch boxes (709419-709490)	2.4	4.5	1.1	2.1	3.9	1.4	1.7
Lighting fixtures, portable lamps and parts (709605-709690)	2.7	1.9	1.4	1.6	1.6	2.9	1.9
Other (709030, 709495, 709500, 709810-709920)	8.9	8.3	5.3	5.5	11.1	13.8	7.8
Turbines, steam engines and water wheels (711110-711900)	1.8	2.0	1.6	1.4	2.2	1.2	1.1
Grand total	166.7	122.4	77.0	70.7	74.8	93.4	55.6

Note: Parts and accessories are included in the above data. (1) Including Newfoundland and Labrador.
(2) Schedule B as revised January 1, 1952. a. Less than $50,000 Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO CANADA (1), 1935-1939

Millions of Dollars

Items and Schedule B Commodity Numbers	1939	1938	1937	1936	1935
Machinery and appliances	10.1	8.9	9.8	6.9	3.8
Generators (7000-7009,7012)	0.3	0.4	0.5	0.2	0.1
Welding sets (7010-7010.2)	0.2	0.1	0.2	0.1	0.1
Self-contained generating sets (7011)	0.1	0.1	0.1	0.1	a
Batteries (7013-7018)	0.2	0.2	0.2	0.2	0.2
Transforming or converting apparatus (7021-7029)	0.2	0.2	0.2	0.2	0.1
Transmission and distribution apparatus (7030-7034,7039)	0.4	0.4	0.6	0.4	0.2
Quantity measuring and testing instruments (7035-7038)	0.7	0.7	0.7	0.5	0.3
Motors and controls (7040-7055)	1.6	1.7	2.1	1.6	0.9
Portable tools (7056)	0.4	0.3	0.3	0.2	0.1
Refrigerators (7057-7059)	2.9	2.3	2.4	1.7	0.9
Incandescent lamp bulbs (7063-7065)	0.3	0.2	0.2	0.2	0.1
Searchlights, floodlights and airport beacons (7066-7067)	0.1	a	a	a	a
Laundry equipment (7068-7068.3,7071)	0.8	0.7	0.6	0.3	0.1
Cooking and heating appliances (7072-7073.5)	0.3	0.3	0.3	0.2	0.1
Industrial melting, refining and heating devices (7074.0-7074.9)	0.2	0.1	0.2	0.1	a
X-Ray and therapeutic apparatus (7075-7075.9)	0.6	0.5	0.5	0.4	0.3
Other (7019, 7060-7061, 7069-7069.3, 7070)	0.7	0.7	0.6	0.5	0.2
Signal and communication apparatus	4.1	3.4	4.2	3.3	2.3
Radio apparatus (7076, 7078-7081)	2.3	1.9	2.4	2.0	1.5
Radio receiving sets (7077)	0.3	0.4	0.4	0.4	0.2
Telegraph apparatus (7082)	0.1	0.1	0.2	0.1	a
Telephone apparatus (7083-7087)	1.2	0.8	1.1	0.6	0.5
Other (7089)	0.2	0.1	0.1	0.1	0.1
Other apparatus	4.5	3.9	4.7	3.5	2.7
Starting, lighting and ignition equipment (7092)	0.4	0.4	0.4	0.3	0.3
Conduit, metal and nonmetal fittings, outlets and switch boxes (7094-7095)	0.7	0.4	0.4	0.3	0.2
Lighting fixtures, portable lamps and parts (7096-7097)	0.6	0.5	0.5	0.4	0.1
Other (7093. 7098-7099.9)	2.8	2.5	3.4	2.5	2.1
Turbines, steam engines and water wheels (7111, 7113, 7163)	0.1	0.1	0.3	a	a
Grand total	18.8	16.3	19.0	13.8	8.9

Note: Parts and accessories are included in the above data

a Less than $50,000

(1) Including Newfoundland and Labrador

Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO LATIN AMERICA, (excl. South America) 1946-1952

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Machinery and appliances	62.4	52.2	45.1	43.9	53.1	53.4	30.1
Generators (700000-700807, 701200)	4.2	1.9	2.5	5.7	5.0	9.5	1.9
Welding sets (701012-701032)	1.3	0.8	0.7	0.3	0.6	0.9	0.8
Self-contained generating sets (701105-701150)	6.1	4.9	4.3	2.8	3.7	1.5	4.0
Batteries (701300-701800)	5.3	5.4	4.1	4.0	3.7	3.5	1.7
Transforming or converting apparatus (702110-702810)	7.5	3.5	4.3	4.3	5.5	4.4	2.0
Transmission and distribution apparatus (703110-703470)	4.7	4.0	3.2	4.1	5.0	4.6	1.9
Quantity measuring and testing instruments (703500-703850)	1.5	1.2	0.8	0.7	1.1	1.0	0.6
Motors and controls (704000-705560)	7.4	5.2	4.2	4.9	7.1	6.7	3.6
Portable tools (705607-705705)	0.7	0.6	0.4	0.3	0.6	0.7	0.7
Refrigerators, freezers and refrigerating systems (705715-705760)	12.7	13.7	11.4	8.2	9.9	7.9	5.4
Bulbs, lamps and tubes (706305-706590)	2.1	2.3	1.7	1.3	1.6	2.0	1.1
Searchlights, floodlights and airport beacons (706600)	...	...	...	0.1	0.1	0.2	0.1
Laundry equipment (706812-706820, 707100)	2.6	2.7	2.1	1.4	1.7	3.0	1.2
Cooking and heating appliances (707200-707395)	1.3	1.5	1.0	0.9	1.4	1.7	0.8
Industrial melting, refining, and heating devices (707415-707492)	0.7	0.4	0.2	0.5	0.5	0.7	0.5
X-Ray and therapeutic apparatus (707505-707590)	1.1	1.0	1.1	1.1	1.4	1.5	1.5
Other (701910, 706000, 706100, 706910-707050)	3.1	3.1	2.9	3.2	4.2	3.6	2.2

(Continued on following page)

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO LATIN AMERICA, (excl. South America) 1946-1952 (Continued)

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Signal and communication apparatus	25.3	22.9	14.7	10.7	14.6	20.3	10.5
Radio and television broadcast station transmitting equipment (707607)	1.9	...	...	...	...	...	...
Radio, radio-phonograph receiving sets (707705-707719)	3.5	12.5	6.7	3.8	5.5	13.5	7.4
Television receiving sets (707721)	10.4	...	...	...	...	...	...
Radio and television receiving tubes (707805, 707812-707815)	1.9	1.8	1.0	0.9	0.9	1.0	0.5
Radio and television capacitors, resistors, inductors and receiving set components (707905-707918, 708100)	2.1	3.0	2.0	1.8	2.0	1.3	0.9
Telegraph apparatus (708500)	0.3	0.2	0.3	0.3	0.3	0.5	0.5
Telephone equipment and instruments (708600-708700)	3.5	3.9	3.8	3.6	5.6	3.0	0.9
Other (707635, 708000, 708800-708900)	1.7	1.5	0.9	0.4	0.3	0.9	0.3
Other apparatus	14.5	13.2	10.8	10.2	10.9	12.8	6.7
Starting, lighting, and ignition equipment (709220)	2.6	2.0	1.9	1.5	1.3	1.4	1.0
Conduit, metal and nonmetal fittings, outlets and switch boxes (709419-709490)	2.3	2.3	1.5	1.9	2.9	1.4	1.3
Lighting fixtures, portable lamps and parts (709605-709690)	2.6	2.6	2.1	1.8	2.2	4.2	1.8
Other (709030, 709495, 709500, 709810-709920)	6.9	6.2	5.2	5.0	4.4	5.8	2.7
Turbines, steam engines and water wheels (711110-711900)	1.3	0.7	0.9	1.9	2.6	1.5	0.5
Grand total	103.5	89.1	71.4	66.7	80.2	88.0	47.9

Note: Parts and accessories are included in the above data. (1) Schedule B as revised January 1, 1952.
Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO LATIN AMERICA (excl. South America), 1935-1939

Millions of Dollars

Items and Schedule B Commodity Numbers	1939	1938	1937	1936	1935
Machinery and appliances	6.8	6.3	8.2	5.8	5.0
Generators (7000-7009, 7012)	0.3	0.7	0.5	0.4	0.2
Welding sets (7010-7010.2)	0.1	0.1	0.2	0.1	0.1
Self-contained generating sets (7011)	0.1	0.1	0.2	0.1	0.1
Batteries (7013-7018)	0.6	0.5	0.6	0.5	0.5
Transforming or converting apparatus (7021-7029)	0.4	0.4	0.5	0.4	0.3
Transmission and distribution apparatus (7030-7034, 7039)	0.5	0.5	0.5	0.3	0.3
Quantity measuring and testing instruments (7035-7038)	0.3	0.2	0.4	0.2	0.2
Motors and controls (7040-7055)	0.8	0.8	1.1	0.7	0.9
Portable tools (7056)	0.1	0.1	0.1	a	a
Refrigerators (7057-7059)	2.0	1.6	2.3	1.7	1.2
Incandescent lamp bulbs (7063-7065)	0.4	0.3	0.4	0.3	0.4
Searchlights, floodlights and airport beacons (7066-7067)	a	a	a	a	a
Laundry equipment (7068-7068.3, 7071)	0.2	0.2	0.4	0.2	0.1
Cooking and heating appliances (7072-7073.5)	0.2	0.1	0.2	0.2	0.2
Industrial melting, refining and heating devices (7074.0-7074.9)	0.1	0.1	0.1	0.1	a
X-Ray and therapeutic apparatus (7075-7075.9)	0.3	0.2	0.3	0.2	0.2
Other (7019, 7060-7061, 7069-7069.3, 7070)	0.3	0.3	0.4	0.3	0.2
Signal and communication apparatus	3.1	2.9	5.5	4.6	3.6
Radio apparatus (7076, 7078-7081)	0.7	0.8	1.1	0.7	0.5
Radio receiving sets (7077)	2.1	1.8	4.1	3.7	2.9
Telegraph apparatus (7082)	a	a	a	a	a
Telephone apparatus (7083-7087)	0.3	0.3	0.2	0.1	0.2
Other (7089)	a	a	a	a	a
Other apparatus	2.0	1.7	1.9	1.4	1.4
Starting, lighting and ignition equipment (7092)	0.1	0.1	0.1	0.1	a
Conduit, metal and nonmetal fittings, outlets and switch boxes (7094-7095)	0.5	0.4	0.6	0.4	0.3
Lighting fixtures, portable lamps and parts (7096-7097)	0.4	0.4	0.4	0.4	0.3
Other (7093, 7098-7099.9)	0.9	0.8	0.9	0.7	0.7
Turbines, steam engines and water wheels (7111, 7113, 7163)	0.1	0.1	0.1	0.1	0.1
Grand total	11.9	10.9	15.7	11.9	10.1

Note: Parts and accessories are included in the above data

a Less than $50,000

Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO SOUTH AMERICA, 1946-1952

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Machinery and appliances	87.7	102.0	66.3	79.4	93.5	96.1	44.9
Generators (700000-700807, 701200)	6.4	6.8	6.6	6.5	7.9	18.4	2.9
Welding sets (701012-701032)	1.9	1.7	1.1	1.5	1.2	2.9	1.6
Self-contained generating sets (701105-701150)	15.0	11.5	7.0	8.7	10.9	3.4	6.2
Batteries (701300-701800)	5.6	7.8	5.3	.5.1	5.5	4.2	3.5
Transforming or converting apparatus (702110-702810)	7.0	6.5	7.3	9.1	7.1	6.6	3.1
Transmission and distribution apparatus (703110-703470)	9.0	5.5	6.1	8.7	9.0	5.8	2.6
Quantity measuring and testing instruments (703500-703850)	1.7	3.0	1.3	1.8	1.9	2.3	1.2
Motors and controls (704000-705560)	11.4	10.8	6.7	11.2	13.6	11.9	6.4
Portable tools (705607-705705)	1.4	1.9	0.9	1.1	1.6	2.3	1.2
Refrigerators, freezers and refrigerating systems (705715-705760)	14.9	27.9	10.6	11.1	15.7	15.5	5.7
Bulbs, lamps and tubes (706305-706590)	2.9	4.1	3.0	2.6	3.8	3.9	3.0
Searchlights, floodlights and airport beacons (706600)	...	...	...	0.1	0.2	0.5	0.1
Laundry equipment (706812-706820, 707100)	3.0	4.5	3.0	3.8	3.7	3.4	0.6
Cooking and heating appliances (707200-707395)	1.6	1.8	1.1	1.1	1.2	2.0	0.9
Industrial melting, refining, and heating devices (707415-707492)	0.7	1.0	1.0	1.4	1.5	2.0	1.0
X-Ray and therapeutic apparatus (707505-707590)	2.4	3.5	3.0	3.2	4.5	5.2	2.5
Other (701910, 706000, 706100, 706910-707050)	2.9	3.8	2.3	2.6	4.1	5.7	2.6

(Continued on following page)

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO SOUTH AMERICA, 1946-1952 (Continued)

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Signal and communication apparatus	23.6	33.9	21.1	14.5	31.6	44.3	19.6
Radio and television broadcast station transmitting equipment (707607)	1.8	...	...	...	...	...	...
Radio, radio-phonograph receiving sets (707705-707719)	3.5	9.4	5.3	3.8	10.3	19.3	8.5
Television receiving sets (707721)	4.8	...	...	...	...	...	...
Radio and television receiving tubes (707805, 707812-707815)	3.6	7.2	2.0	1.7	2.8	5.0	1.8
Radio and television capacitors, resistors, inductors and receiving set components (707905-707918, 708100)	3.6	9.2	3.2	3.2	3.6	7.8	3.8
Telegraph apparatus (708500)	1.3	0.6	0.6	0.3	0.3	0.5	0.3
Telephone equipment and instruments (708600-708700)	3.3	4.0	8.4	4.4	13.4	9.7	4.5
Other (707635, 708000, 708800-708900)	1.9	3.4	1.6	1.1	1.2	1.9	0.7
Other apparatus	21.9	17.0	12.1	17.6	17.4	18.8	8.4
Starting, lighting, and ignition equipment (709220)	5.9	6.0	3.0	2.9	2.5	3.2	1.5
Conduit, metal and nonmetal fittings, outlets and switch boxes (709419-709490)	2.8	2.1	1.5	3.5	4.7	1.6	1.5
Lighting fixtures, portable lamps and parts (709605-709690)	2.6	2.1	1.8	2.1	3.5	5.2	1.5
Other (709030, 709495, 709500, 709810-709920)	10.5	6.7	5.8	9.1	6.6	8.9	3.8
Turbines, steam engines and water wheels (711110-711900)	1.9	2.3	2.3	1.6	5.9	4.6	1.8
Grand total	135.1	155.2	101.7	113.2	148.3	163.8	74.6

Note: Parts and accessories are included in the above data. (1) Schedule B as revised January 1, 1952.
Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO SOUTH AMERICA, 1935-1939

Millions of Dollars

Items and Schedule B Commodity Numbers	1939	1938	1937	1936	1935
Machinery and appliances	15.0	12.7	12.7	8.7	6.6
Generators (7000-7009, 7012)	3.1	1.6	0.8	0.5	0.6
Welding sets (7010-7010.2)	0.3	0.2	0.2	0.1	0.1
Self-contained generating sets (7011)	0.4	0.4	0.6	0.2	a
Batteries (7013-7018)	1.2	1.2	1.7	1.3	0.9
Transforming or converting apparatus (7021-7029)	1.0	1.0	0.9	0.7	0.5
Transmission and distribution apparatus (7030-7034, 7039)	1.3	1.3	0.8	0.5	0.4
Quantity measuring and testing instruments (7035-7038)	0.4	0.3	0.4	0.2	0.2
Motors and controls (7040-7055)	1.7	1.6	1.8	1.2	1.0
Portable tools (7056)	0.2	0.1	0.2	0.1	0.1
Refrigerators (7057-7059)	3.4	3.2	3.5	2.5	1.8
Incandescent lamp bulbs (7063-7065)	0.4	0.4	0.5	0.4	0.3
Searchlights, floodlights and airport beacons (7066-7067)	0.1	a	a	a	a
Laundry equipment (7068-7068.3, 7071)	0.2	0.2	0.2	0.1	a
Cooking and heating appliances (7072-7073.5)	0.2	0.2	0.2	0.2	0.1
Industrial melting, refining and heating devices (7074.0-7074.9)	0.1	0.1	0.1	0.1	a
X-Ray and therapeutic apparatus (7075-7075.9)	0.4	0.3	0.4	0.2	0.2
Other (7019, 7060-7061, 7069-7069.3, 7070)	0.5	0.4	0.5	0.4	0.3
Signal and communication apparatus	6.3	7.9	8.9	6.7	6.4
Radio apparatus (7076, 7078-7081)	3.0	3.5	4.3	2.9	2.6
Radio receiving sets (7077)	2.8	2.8	3.8	3.3	3.3
Telegraph apparatus (7082)	a	a	a	a	a
Telephone apparatus (7083-7087)	0.4	1.5	0.8	0.5	0.6
Other (7089)	a	a	a	a	a
Other apparatus	2.6	2.2	2.4	1.7	1.3
Starting, lighting and ignition equipment (7092)	0.2	0.1	0.1	0.1	0.1
Conduit, metal and nonmetal fittings, outlets and switch boxes (7094-7095)	0.7	0.5	0.6	0.4	0.3
Lighting fixtures, portable lamps and parts (7096-7097)	0.2	0.2	0.2	0.2	0.2
Other (7093, 7098-7099.9)	1.5	1.3	1.5	1.0	0.8
Turbines, steam engines and water wheels (7111, 7113, 7163)	0.1	0.1	0.2	0.1	0.2
Grand total	24.0	22.9	24.1	17.2	14.5

Note: Parts and accessories are included in the above data

a Less than $50,000

Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO OCEANIA, 1946-1952

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Machinery and appliances	9.7	4.0	1.8	3.6	2.9	6.8	2.1
Generators (700000-700807, 701200)	4.4	1.0	0.1	0.1	a	0.7	a
Welding sets (701012-701032)	a	0.1	a	a	a	0.1	a
Self-contained generating sets (701105-701150)	1.1	0.2	0.1	0.6	0.4	0.1	0.2
Batteries (701300-701800)	0.1	0.1	a	0.1	a	0.1	a
Transforming or converting apparatus (702110-702810)	0.8	0.1	a	0.1	a	1.1	0.1
Transmission and distribution apparatus (703110-703470)	1.4	0.5	0.3	0.6	0.2	1.0	0.2
Quantity measuring and testing instruments (703500-703850)	0.2	0.2	0.2	0.3	0.3	0.3	0.2
Motors and controls (704000-705560)	0.6	0.6	0.3	0.6	0.8	0.7	0.2
Portable tools (705607-705705)	0.2	0.2	0.1	0.1	0.1	0.3	0.1
Refrigerators, freezers and refrigerating systems (705715-705760)	0.2	0.5	0.3	0.5	0.4	1.4	0.5
Bulbs, lamps and tubes (706305-706590)	0.2	0.2	0.1	0.2	0.3	0.5	0.2
Searchlights, floodlights and airport beacons (706600)	...	...	...	a	a	a	a
Laundry equipment (706812-706820, 707100)	0.1	0.1	a	a	a	a	a
Cooking and heating appliances (707200-707395)	a	a	a	a	a	a	a
Industrial melting, refining, and heating devices (707415-707492)	0.2	0.1	0.1	a	0.1	0.1	a
X-Ray and therapeutic apparatus (707505-707590)	0.1	0.1	0.1	0.2	0.1	0.3	0.2
Other (701910, 706000, 706100, 706910-707050)	0.1	a	a	a	a	0.1	a

(Continued on following page)

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO OCEANIA, 1946-1952 (Continued)

Millions of Dollars

Items and Schedule B commodity numbers (1)	1952	1951	1950	1949	1948	1947	1946
Signal and communication apparatus	1.0	1.5	1.8	1.0	0.7	2.4	0.6
Radio and television broadcast station transmitting equipment (707607)	a	...	...	...	...	...	...
Radio, radio-phonograph receiving sets (707705-707719)	a	a	a	a	a	0.2	a
Television receiving sets (707721)	...	...	...	...	...	...	...
Radio and television receiving tubes (707805, 707812-707815)	0.1	0.1	a	0.1	0.1	0.7	0.2
Radio and television capacitors, resistors, inductors and receiving set components (707905-707918, 708100)	0.1	0.2	0.1	0.1	0.1	0.5	0.2
Telegraph apparatus (708500)	0.4	0.5	0.5	0.2	0.2	0.2	a
Telephone equipment and instruments (708600-708700)	0.4	0.7	1.2	0.5	0.2	0.7	0.1
Other (707635, 708000, 708800-708900)	a	a	a	a	a	0.1	a
Other apparatus	1.2	0.8	0.6	0.8	1.0	2.7	0.8
Starting, lighting, and ignition equipment (709220)	0.6	0.5	0.4	0.4	0.2	0.4	0.1
Conduit, metal and nonmetal fittings, outlets and switch boxes (709419-709490)	0.1	a	a	a	a	a	a
Lighting fixtures, portable lamps and parts (709605-709690)	a	a	a	a	0.1	0.6	0.1
Other (709030, 709495, 709500, 709810-709920)	0.5	0.2	0.1	0.4	0.7	1.7	0.5
Turbines, steam engines and water wheels (711110-711900)	0.4	a	a	a	0.2	0.1	a
Grand total	12.3	6.3	4.3	5.4	4.8	12.0	3.5

Note: Parts and accessories are included in the above data. (1) Schedule B as revised January 1, 1952.
a. Less than $50,000
Source: Bureau of the Census

U. S. DOMESTIC EXPORTS OF ELECTRICAL MACHINERY AND APPARATUS TO OCEANIA, 1935-1939

Millions of Dollars

Items and Schedule B Commodity Numbers	1939	1938	1937	1936	1935
Machinery and appliances	2.3	3.0	2.1	2.0	2.2
Generators (7000-7009, 7012)	a	0.1	0.1	a	a
Welding sets (7010-7010.2)	a	a	a	a	a
Self-contained generating sets (7011)	a	0.1	0.1	a	a
Batteries (7013-7018)	0.1	0.1	0.1	0.1	0.1
Transforming or converting apparatus (7021-7029)	0.1	0.1	0.1	a	a
Transmission and distribution apparatus (7030-7034, 7039)	0.1	0.3	0.1	0.2	0.1
Quantity measuring and testing instruments (7035-7038)	0.1	0.2	0.2	0.1	0.1
Motors and controls (7040-7055)	0.3	0.4	0.3	0.3	0.2
Portable tools (7056)	0.1	0.1	a	0.1	0.1
Refrigerators (7057-7059)	0.9	1.1	0.5	0.6	1.0
Incandescent lamp bulbs (7063-7065)	0.1	0.1	0.1	0.1	0.1
Searchlights, floodlights and airport beacons (7066-7067)	a	a	a	a	a
Laundry equipment (7068-7068.3, 7071)	0.1	0.2	0.1	0.2	0.1
Cooking and heating appliances (7072-7073.5)	a	a	0.1	a	a
Industrial melting, refining and heating devices (7074.0-7074.9)	a	a	a	a	a
X-Ray and therapeutic apparatus (7075-7075.9)	0.1	0.1	0.1	0.1	0.1
Other (7019, 7060-7061, 7069-7069.3, 7070)	0.2	0.2	0.1	0.2	0.2
Signal and communication apparatus	1.2	1.3	2.0	1.8	1.4
Radio apparatus (7076, 7078-7081)	0.7	0.7	1.0	1.0	0.8
Radio receiving sets (7077)	a	0.2	0.6	0.5	0.4
Telegraph apparatus (7082)	a	a	a	a	a
Telephone apparatus (7083-7087)	0.5	0.4	0.4	0.3	0.2
Other (7089)	a	a	a	a	a
Other apparatus	0.6	0.6	0.5	0.5	0.4
Starting, lighting and ignition equipment (7092)	0.1	0.1	0.1	0.1	0.1
Conduit, metal and nonmetal fittings, outlets and switch boxes (7094-7095)	0.1	a	a	0.1	0.1
Lighting fixtures, portable lamps and parts (7096-7097)	a	a	a	a	0.1
Other (7093, 7098-7099.9)	0.5	0.5	0.3	0.3	0.2
Turbines, steam engines and water wheels (7111, 7113, 7163)	a	a	a	a	a
Grand total	4.2	4.9	4.5	4.3	4.0

Note: Parts and accessories are included in the above data

a Less than $50,000

Source: Bureau of the Census

ITEMS NOT INCLUDED IN DETAILED TRADING AREA TABLES

Millions of Dollars

Items	1952	1951	1950	1949	1948	1947	1946
Radio transmitting tubes	4.9	4.5	2.3	2.3	1.8	2.0	2.1
Radio transmitting, special category Type 2	...	18.7	10.9	10.7	27.1	20.4	12.7
Electrical signal and detection apparatus and parts	...	.4	...	...	...	...	...
Aircraft radio transmitting and receiving sets	...	...	...	...	1.4	1.3	...
Direction range finders	...	...	...	...	a	a	...
Radio ground equipment, aircraft	...	...	...	...	1.8	2.0	...
Special category Type 1	138.5	80.3	42.8	44.6	...	...	...
Countries under $1,000	1.0	.8	...	...	...	...	...
Total	144.4	104.7	56.1	57.5	32.1	25.8	14.8
Electrical machinery and apparatus shown in detailed area tables	615.4	535.4	388.2	438.5	467.7	548.1	298.1
Grand total	759.8	640.1	444.3	496.0	499.8	573.9	312.9

Note: The items shown above have either been removed from or not included in the set of tables showing breakdown of Electrical Machinery and Apparatus by items, by Trading Area, because: (1) the data for the later years omit country and area breakdowns (2) the inception of Special Categories, May 1949, and (3) a new classification beginning 1951 which gives only a world total figure for those countries whose imports were under $1,000.

a Less than $50,000

Sources: Bureau of the Census; The Conference Board

Section III

1. Balance of payments of the United States and other leading countries, prewar and postwar.
2. Who would benefit most from freer trade?
3. Loss of markets in iron curtain countries.
4. Economic consequences of altered colonial relationships.

SECTION III

The Balance of Payments - Summary

The balance of payments, a statement of the total of a country's transactions with foreigners, reflects the overall flow of funds between that country and the rest of the world, and affords the most adequate measure of changes in its external financial position.

As the statement's name implies, the total of a country's receipts from foreigners as reflected in the balance of payments must equal its payments to foreigners. Transactions requiring foreigners to make payments to the reporting country constitute credits, while transactions requiring payments to foreigners constitute debits. Thus, sales of goods and services are credits; purchases are debits. An outflow of capital, such as a loan to a foreign country (an import of securities), is a debit item in the lending nation, since it places at the disposal of the borrower an amount of the lending nation's currency equivalent to the value of the loan. Conversely, an inflow of capital (export of securities) is a credit item in the borrowing country. Thus with respect to capital items, an increase in a country's liabilities (or a decrease in its assets) is a credit item, since it reflects an inflow of capital. A decrease in its liabilities (or an increase in its assets) represents an outflow of capital and thus is a debit item.

The net inflow or outflow of capital reflects changes in the current account (goods and services) position of the reporting country. In normal practice a country can maintain imports of goods and services in excess of its exports only through a net inflow of foreign capital or a decrease in its foreign assets, or a combination of both. In recent years, however, a new device, i.e. outright grants from abroad, have enabled certain foreign countries to maintain a level of imports much higher than if they were forced to pay for these imports out of current production.

As a concrete example of the way in which a country's payments are balanced, the balance of payments of the U.S. in 1946 is presented below:

	Credit	Debit
	(in millions of dollars)	
U.S. exports of goods and services	14,741	
U.S. imports of goods and services		7,037
Private donations abroad by U.S. citizens		679
Net investment of U.S. private capital abroad		369
U.S. Government aid (net)		
Grants		2,214
Credits		3,012
Liquidation of long-term U.S. assets held by foreigners		347
Reduction of gold and short-term dollar assets held by foreigners		1,262
Net errors and omissions	179	
TOTAL	14,920	14,920

The Balance of Payments Since the War

Dislocations in the international economy brought about by World War II created serious balance-of-payments difficulties for certain areas of the world, and particularly for Western Europe and Japan. Western Europe in 1947 had a deficit on account of goods and services of almost $7.5 billion as compared with an approximate balance in 1938. For Japan a surplus on goods and services of $70 million in 1936 became a deficit of $273 million in 1946.

To a striking degree the payments problem of these areas focused on the United States. Of Western Europe's total deficit of nearly $7.5 billion in 1947, the deficit with the United States constituted almost $5.5 billion. This large deficit with the U.S. reflects the heavy reliance on the U.S. as a source of supply of capital goods needed in reconstruction and an increased demand for U.S. supplies of raw materials and foodstuffs formerly imported from Eastern Europe and Asia. Furthermore, Western Europe, faced with high import requirements, found itself with a reduced capacity to produce for export and without its normally large income from services, which before the war was sufficient to balance its trade deficit.

Moreover, the war-stimulated drive toward industrialization in areas outside Europe, along with reduced productive capacity in Western Europe, combined to create heavy demands in these areas for imports of U.S. products. The United States, which had traditionally shown a current account surplus with Western Europe, had also in the immediate postwar years developed a surplus with outlying areas with which she had traditionally shown a deficit.

It was apparent that for countries abroad to pursue a program of physical and economic reconstruction without a serious impairment of living standards would require a continued high level of imports from the United States. In Western Europe particularly, the prospects for any immediate sizable expansion of exports of goods and services left little hope for closing the deficit through this medium. Thus if foreign countries were to avoid drains on their international monetary reserves of perhaps disastrous proportions, some means was necessary to enable them to finance their deficit. The United States has since the war supplied the means through the medium of government aid. From the end of the war (July 1, 1945), to June, 1953, the U.S. Government had supplied foreign countries with grants and credits totaling $45.5 billion. Such aid has undoubtedly accelerated the progress toward reconstruction.

The balance of payments of the United States in the postwar years clearly reflects the progress made abroad in overcoming these dislocations brought on by the war. In the period 1946-48, our sales of goods and services of $51.5 billion were about twice the value of our purchases of $25.6 billion. The U.S. Government provided net grants and capital of $19.1 billion toward closing the gap. Private U.S. donations and capital provided an additional $4.2 billion. Still, foreign countries were required to draw heavily on their reserves of gold and short-term dollar assets.

Beginning in 1949, a marked improvement is apparent in the financial relations of the rest of the world with the U.S. From 1949 through June 30, 1953, foreign countries were able to pay for about three-fourths of their purchases of goods and services from the U.S. with sales to the U.S., with an overall deficit in this period of $21.5 billion. Net U.S. Government grants and capital provided $23.8 billion, an amount in excess of the total deficit of foreign countries. With additional dollars provided from private sources, foreigners were able to increase their reserves of gold and short-term dollar assets by almost $5.5 billion. By June 30, 1953, foreign gold and short-term dollar assets (excluding holdings of international institutions) had reached well over $21 billion, exceeding the previous high at the end of 1945.

The improvement apparent in 1949 and 1950 slowed down temporarily in 1951. Foreigners' gold and dollar assets, which were increased by $2,655 million in 1950, increased by only $985 million in 1951. This lower rate of increase is due almost entirely to the adverse movement in Western Europe,

which suffered from the rapid increase in raw materials prices following the outbreak of the Korean war in the summer of 1950.

The U. S. balance of payments in recent years indicates that countries abroad have for the most part recovered their ability to pay for purchases of dollar goods with sales to the U.S. Despite a continued high level of imports from the U.S., foreign countries since the beginning of 1952 have been able to increase their reserves of gold and short-term dollar assets by more than the amount of economic aid extended by the U.S. in that period.

The balances of payments of nine foreign countries are presented in this section in a somewhat different form than that used to present the U.S. payments balance. This form was developed by the International Monetary Fund to focus attention on so-called "compensatory" financing undertaken by the monetary authorities.

This statement attempts to isolate all so-called "autonomous" transactions. These autonomous transactions are covered in the items "Goods and services," "Capital movements" (private capital including private donations), and "Special official financing." Compensatory official financing is undertaken by the monetary authorities in response to a surplus or deficit in these transactions.

Special official financing covers official transactions that are undertaken without regard to the general balance of payments position. Such transactions may in fact increase a payments deficit. For example, contractual obligations such as amortization and reparations payments must be met regardless of a country's payments position. Official loans extended to finance specific productive projects, as distinguished from general purpose loans, are also considered as special rather than compensatory financing. Thus development loans of the Export-Import Bank or the IBRD are considered as special official financing.

Compensatory official financing includes such transactions as multilateral currency settlements, utilization of EPU or OEEC drawing rights or IMF resources, inter-governmental grants and loans, movements in official short-term assets and gold, or any other similar transactions.

UNITED STATES BALANCE OF PAYMENTS DURING THE YEAR ENDED JUNE 30, 1953

(In millions of dollars)

U. S. imports of goods and services were....	16,352	
U. S. exports of goods and services (excluding those furnished under economic and military grants in aid) were....	14,910	
So that foreign countries' dollar receipts from goods and services exceeded expenditures by....	1,442	
Foreign countries received additional dollars from:		
Private remittances	475	
U. S. private direct investments and other loans	441	
U. S. Government loans, net	175	
Net dollar receipts of foreign countries from above items were	2,533	
Foreign countries were able to increase their gold and dollar assets by....		2,414
Foreign countries received additional goods and services in the amount of....		6,219
Made possible by U. S. grants in aid:		
Military aid	4,234	
Economic aid and other transfers	1,985	
Errors and omissions		119
Total	8,752	8,752

UNITED STATES BALANCE OF PAYMENTS DURING THE CALENDAR YEAR 1947

(In millions of dollars)

U. S. imports of goods and services were....		8,318
U. S. exports of goods and services (excluding those furnished under economic and military grants in aid) were....		17,878
So that foreign countries' dollar expenditures for goods and services exceeded receipts by...		9,560
Foreign countries received dollars from these sources:		
Private remittances	665	
U. S. private direct investments and other loans...	999	
U. S. Government loans, net	6,957	
Net dollar expenditures of foreign countries from above items were		939
Foreign countries reduced their gold and dollar assets to cover expenditures	1,919	
Foreign countries received additional goods and services in the amount of		1,918
Made possible by U. S. grants in aid:		
Military aid	74	
Economic aid and other transfers	1,844	
Errors and omissions		980
	3,837	3,837

ECONOMIC CONSEQUENCES OF ALTERED COLONIAL RELATIONSHIPS - Summary

Changes in colonial status have had a very definite effect on the trade relations between the (former) mother countries and their colonies. There have, however, been several other factors which have affected these relations. Moreover, such changes as have occurred may be the continuation of a long-term trend rather than the result of more recent political patterns.

Other considerations which have entered the picture have included the ups and downs of prices, the fluctuations in the terms of trade, the inability of mother countries to supply certain types of capital goods on a competitive basis, and the emergence of the United States as the world's leading foreign trade nation. Conversely, dollar shortages may at times have forced colonial countries to buy in the former metropolitan countries, although they may not have desired to do so.

Altogether, the effect of political severance appears to have been stronger on investment earnings and on the placement of new capital than on the actual volume of trade. For the United Kingdom and the Netherlands the dwindling of earnings from investments in former colonies constitutes a serious balance of payments problem. In turn, they may look to other overseas areas as potential outlets for future capital investments.

There is also the question whether, as political friction disappears, old trade and financial bonds can be re-established.

France and Belgium have maintained close economic relations with their colonial areas overseas, and France, in particular, has been able to ship an increasingly large percentage of her exports to the colonies. The relative protection which French exporters enjoy in the colonies has also produced certain disadvantages, as surpluses piled up vis-a-vis the colonies cannot be used to pay for trade deficits incurred elsewhere.

The strengthening of United States trade with the colonial areas has been the result, among other things, of larger American raw material purchases, and of dollar funds made available by the United States to overseas countries, to be used for purchases in this country.

WHO WOULD BENEFIT MOST FROM FREER TRADE

Summary

After their virtual eclipse in the years immediately following World War II, West German exports have made a spectacular reappearance. At a time when the exports of other countries had passed their post-war peak, those of Germany were and still are expanding. Even now, however, West Germany accounts for a smaller share of world trade (both export and import) than before the war.

European manufacturers, particularly those of capital goods, are most concerned over the impact of West German trade on overseas markets, such as Latin America and the Near and Middle East. This concern does not extend to the United States market, and West German manufacturers, despite some gains in their American business, do not now consider the United States a major or worthwhile outlet for capital goods.

German successes in Latin America have been the most striking in any overseas territory. Taking advantage of unutilized industrial capacity, West Germany almost doubled its shipments to Latin America between 1950 and 1951. Since then, however, German sales have failed to rise further, partly because of the payment difficulties experienced by some Latin American republics. Even now, Germany sends a somewhat smaller part of her exports to Latin America than she did before the war.

Short delivery periods and satisfactory credit terms for capital goods purchases have become the deciding factors in the Latin American business, which is now more competitive than before. Germany enjoys no particualr advantages over other European countries on those two points.

West Germany has reappeared also in the Near and Middle Eastern markets which are generally considered to be more valuable in the future rather than at present. In actual volume German exports to this area have been small, and she has a long way yet to catch up with the United Kingdom, the strongest competitor in this region.

Nevertheless, Germany has been able to capture some important capital goods orders in this part of the world. Some political factors, such as the reparations agreement with Israel and efforts to keep on good terms with the Arab nations, may also in the long run benefit West German trade with the Near and Middle East.

LOSS OF MARKETS NOW BEHIND THE IRON CURTAIN

Summary

Western European trade with Soviet Russia and her satellites today is clearly much smaller than in pre-war years. Not only have exports to, and imports from, the Iron Curtain countries failed to keep up with the overall increases in trade values, but they have actually declined absolutely, as the political gulf between the West and the East has widened.

This pattern is even more evident in the case of Germany which before the war did relatively more business with the Eastern countries than other West European nations. West German trade with the East now is at an even lower level than that of Western Europe generally.

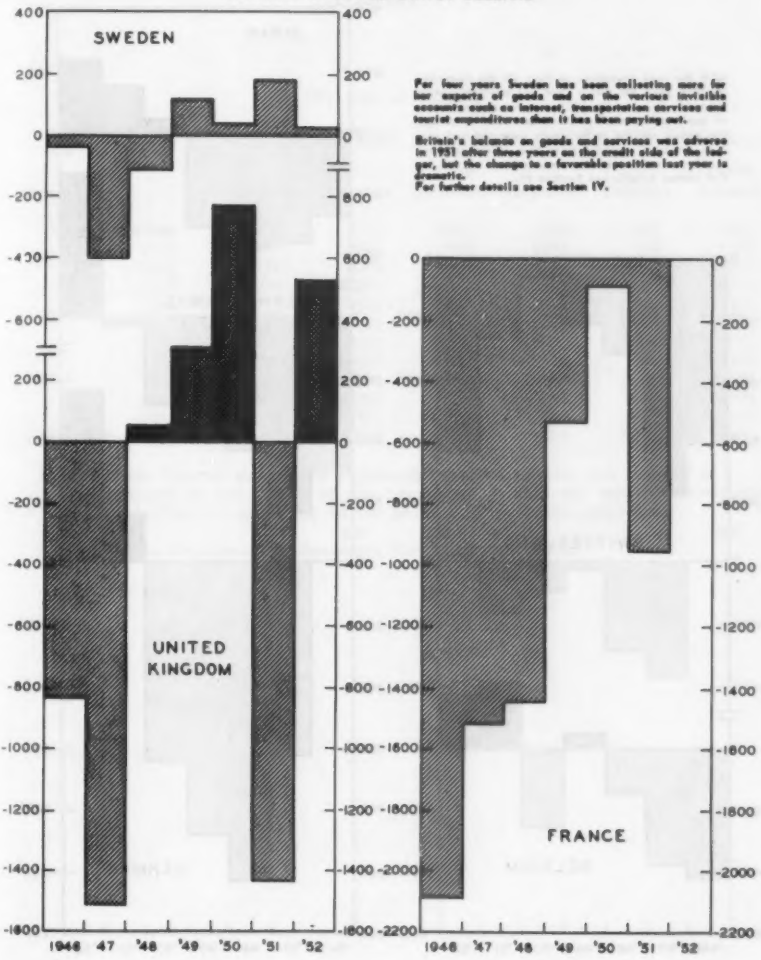
What is true of East-West trade in general applies also to the electrical industry in particular. Before the war, the Eastern countries were a not inconsiderable market for electrical goods, especially exports from Germany. At present, such trade rarely goes beyond spare parts and accessories for installations made in pre-war years.

The situation is further complicated by the existence of extensive electrical production facilities in the Eastern zone of Germany. It is, therefore, difficult to assess how far, in the absence of present restrictions on deliveries, the East would evince a genuine demand for West European electrical products. It is a reasonable estimate, however, that for West Germany the virtual disappearance of the East European markets constitutes a real loss, probably more so than for other West European countries.

It also appears likely that, given a different political constellation, much more of China's foreign trade, particularly in the capital goods field, would have been transacted with Western Europe and Japan. As matters stand, the Soviet Union and her European satellites now fill most of China's import needs, though they did practically no business at all with her before the war.

BALANCE OF GOODS AND SERVICES - I

MILLIONS OF UNITED STATES DOLLARS



For four years Sweden has been collecting more for her exports of goods and on the various invisible accounts such as interest, transportation services and tourist expenditures than it has been paying out.

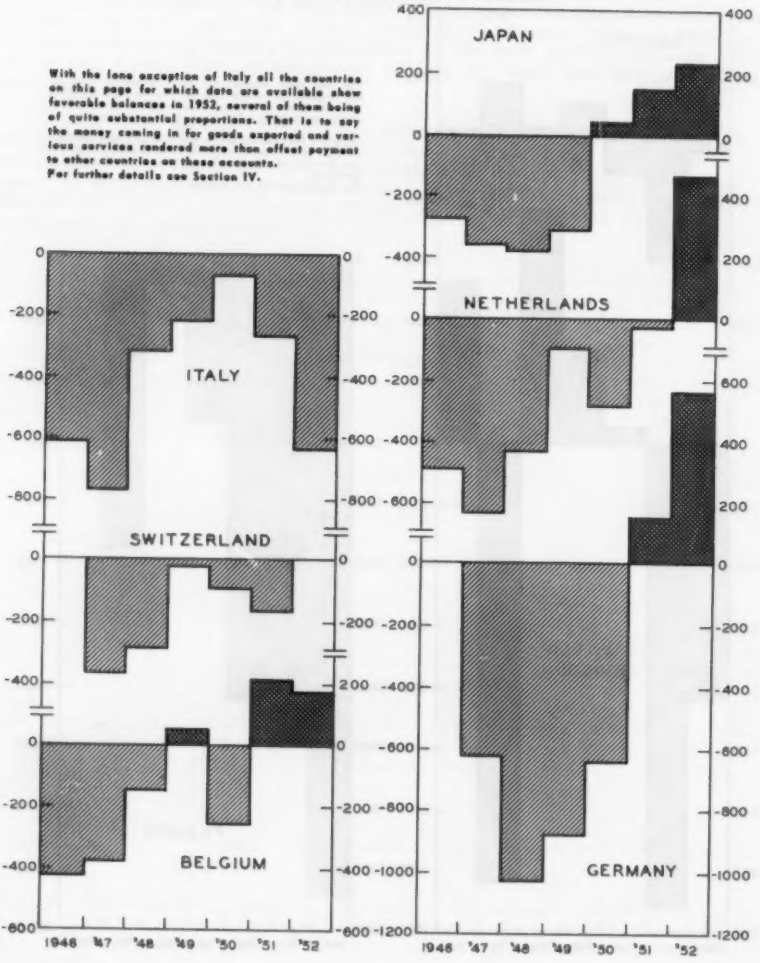
Britain's balance on goods and services was adverse in 1951 after three years on the credit side of the ledger, but the change to a favorable position last year is dramatic.

For further details see Section IV.

BALANCE OF GOODS AND SERVICES - II

MILLIONS OF UNITED STATES DOLLARS

With the lone exception of Italy all the countries on this page for which data are available show favorable balances in 1952, several of them being of quite substantial proportions. That is to say the money coming in for goods exported and various services rendered more than offset payment to other countries on these accounts.
For further details see Section IV.



UNITED STATES MERCHANDISE TRADE WITH ALL AREAS AND WITH EUROPE 1931-1953

In Millions of Dollars

Year	Total Trade			Trade with Europe		
	Exports	Imports	Trade Balance	Exports	Imports	Trade Balance
1931-35 average	2025	1713	+312	960	517	+443
1936	2456	2423	+33	1043	718	+325
1937	3349	3084	+265	1360	843	+517
1938	3094	1960	+1134	1326	567	+759
1946	9739	4909	+4830	4097	796	+3301
1947	15340	5755	+9585	5670	816	+4854
1948	12651	7123	+5528	4276	1120	+3156
1949	12042	6622	+5420	4115	925	+3190
1950	10275	8842	+1433	2946	1388	+1558
1951	15020	10959	+4061	4038	2039	+1999
1952	15164	10713	+4451	3342	2028	+1314
1st half 1953	8060	5635	+2425	1446	1175	+271

Note: Trade figures shown here represent recorded exports and imports as compiled by the Bureau of the Census and so will not agree with adjusted trade figures appearing in the balance of payments statements

Source: U.S. Department of Commerce, Bureau of the Census

UNITED STATES BALANCE OF PAYMENTS, 1946-1953

Millions of Dollars

	1st half, 1953		1952		1951		1950	
	All Areas	Total Europe	All Areas	Total Europe	All Areas	Total Europe	All Areas	Total Europe
Merchandise exports, adjusted	8745	3540	15806	5534	15485	5335	10658	3589
Merchandise imports, adjusted	-6107	-1347	-11503	-2309	-11668	-2251	-9315	-1505
Merchandise balance	2638	2193	4303	3225	3817	3084	1343	2084
Transportation	86	-25	273	57	554	293	128	14
Travel	-106	-97	-298	-205	-302	-151	-350	-175
Miscellaneous services:								
Private	208	34	401	65	374	71	311	26
Government	-686	-249	-1278	-419	-873	-235	-441	-165
Income on investments:								
Private	666	-31	1314	-94	1449	-112	1228	-176
Government	19	25	140	150	145	154	78	82
Balance on goods and services	2825	1850	4855	2779	5164	3104	2297	1690
Unilateral transfers, net:								
Private	-242	-128	-433	-226	-412	-210	-481	-278
Government:								
Economic aid	-949	-656	-1935	-1438	-2969	-2179	-3469	-2761
Military aid	2669	-2132	-2593	-2143	-1462	-1111	-574	-504
Other transfers	-68	-14	-129	-25	-70	11	-77	-2
Total	-3928	-2930	-5090	-3832	-4913	-3489	-4601	-3545
United States capital (net):								
Private	-133	117	-1067	-34	-1066	14	-1317	-271
Government	-48	99	-477	-108	-163	110	-164	-129
Total	-181	216	-1544	-142	-1229	124	-1481	-400
Foreign capital:								
Long-term	129	57	400	135	-543	17	974	349
Short-term	352	381	1162	649	1038	167	912	150
Gold sales (purchases -)	731	574	-379	-321	-53	-295	1743	1345
Errors and omissions	72	-148	596	732	536	372	156	305

UNITED STATES BALANCE OF PAYMENTS, 1946-1953 (Continued)

Millions of Dollars

	1949		1948		1947		1946	
	All Areas	Total Europe	All Areas	Total Europe	All Areas	Total Europe	All Areas	Total Europe
Merchandise exports, adjusted	12337	4485	13346	4933	15977	6219	11672	5276
Merchandise imports, adjusted	-7066	-1177	-7822	-1394	-6129	-1067	-5242	-1053
Merchandise balance	5271	3308	5524	3539	9848	5152	6430	4223
Transportation	500	244	669	393	1027	669	821	557
Travel	-315	-130	-292	-71	-206	-45	-205	-29
Miscellaneous services:								
Private	316	23	321	71	291	106	322	137
Government	-453	-207	-614	-219	-379	-132	-258	115
Income on investments:								
Private	979	-119	1006	-68	847	-69	588	-46
Government	73	78	85	75	50	49	6	11
Balance on goods and services	6371	3197	6699	3720	11478	5730	7704	4968
Unilateral transfers, net:								
Private	-522	-303	-678	-437	-665	-497	-679	-428
Government:								
Economic aid	-5010	-3961	-3679	-2755	-1798	-648	-2200	-341
Military aid	-202	-158	-420	-349	-74	-74	...	...
Other transfers	-109	-31	-58	-9	-46	20	-14	-53
Total	-5843	-4453	-4835	-3550	-2583	-1199	-2893	-822
United States capital (net):								
Private	-609	45	-864	-122	-999	-121	-369	-172
Government	-647	-563	-886	-961	-6957	-3706	-3012	-2350
Total	-1256	-518	-1750	-1083	-7956	-3827	-3381	-2522
Foreign capital:								
Long term	144	87	-170	-185	-96	-194	-347	-116
Short term	-37	23	549	368	339	786	-639	-315
Gold sales (purchases -)	-164	-228	-1530	-928	-2162	-1474	-623	-384
Errors and omissions	785	1892	1037	1658	980	1750	179	-809

Source: Department of Commerce

UNITED KINGDOM - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948	1947	1946	1938
Exports, f.o.b.	7,941	7,582	6,230	6,989	6,400	4,574	3,647	2,606
Imports, f.o.b.	-8,196	-9,792	-6,642	-7,563	-7,218	-6,287	-4,356	-4,083
Merchandise balance	-255	-2,210	-412	-574	-818	-1,713	-709	-1,477
Foreign travel	-3	-95	-62)		(-133	-222	-117	-59
Shipping	302	297	316)		(306	133	117	98
Investment income	171	252	358)	883	(306	322	286	856
Government, n.s.e.	-426	-400	-305)		(-387	-423	-846	-78
Other services	737	725	874)		(778	395	439	318
Balance on goods and services	526	-1,431	769	309	52	-1,508	-830	-342
Capital movements (net)	-350	-540	62	-843	-697	-1,369	572	-191
Special official financing (net)	-179	-146	-117	-167	-278	-677	-532	...
Compensatory official financing (net)	3	2,117	-714	755	923	3,554	790	636
Net errors and omissions	...	...	...	-54	...	...	...	-103

Note: No sign indicates credit; minus sign indicates debit.

Sources: International Monetary Fund; The Conference Board

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NETHERLANDS - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948	1947	1946	1938
Exports, f.o.b.	2,019.8	1,847.0	1,368.6	1,253.0	1,005.1	718.2	307.6	592.9
Imports, f.o.b.	-1,873.9	2,122.1	-1,824.4	-1,623.0	-1,617.0	-1,417.1	-809.0	-682.6
Merchandise balance	145.9	-275.0	-455.8	-370.0	-611.9	-698.9	-501.4	-89.7
Transportation	77.8	62.1	68.1	102.0	70.9	19.6	14.0	6.6
Investment income	67.6	49.4	35.0	71.0	49.7	46.7	46.7	86.4
Government, not elsewhere included	-18.7	-8.2	-39.7	-26.0	-63.3	-93.1	-90.8	0.6
Other services	196.5	148.0	112.0	125.0	126.3	97.3	36.9	1.1
Balance on goods and services	469.1	-23.7	-280.4	-98.0	-428.3	-628.4	-494.6	5.0
Capital movements	8.4	23.7	12.9	-20.0	47.9	64.1	-13.9	-5.0
Special official financing	-68.9	-45.8	-86.0	-74.0	-34.3	-91.2	-17.7	1.1
Financing of Indonesia and overseas parts of the Realm	-1.3	-32.1	-0.8	-160.0	-139.1	-111.6	-72.8	...
Compensatory official financing	-427.1	117.3	358.2	355.0	553.8	767.1	617.1	-195.3
Errors and omissions	19.7	-39.4	-3.9	-3.0	...	...	-18.1	194.2

Note: No sign indicates credit; minus sign indicates debit.

Source: League of Nations; International Monetary Fund

SWITZERLAND - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948	1947	1938
Exports, f.o.b.	110.6	1,093.0	911.3	805.5	800.1	761.4	301.2
Imports, c.i.f.	-121.0	1,378.4	-1,056.9	-883.3	-1,164.8	-1,123.1	-367.5
Merchandise balance	-10.4	-285.4	-145.6	-77.8	-364.7	-361.7	-66.3
Foreign travel (net)	...	69.9	58.3	69.9	93.2	26.3	...
Non-monetary gold movement	...	-14.9	-11.4	-15.4	-12.8	-56.2	...
Investment income	...	69.9	...	...	...	28.0	...
Other services	...	...	...	...	...	...	...
Balance on goods and services	...	-160.5	-98.7	-23.3	-284.3	-363.6	...
Capital movements (net)	...	-45.2	-74.8	-86.2	17.5	-129.7	...
Compensatory official financing	...	13.3	119.7	-76.0	-90.6	97.6	...
Errors and omissions	...	192.4	53.8	185.5	357.4	395.6	...

Note: No sign indicates credit; minus sign indicates debit. Neither official nor private estimates of the balance of payments are published. The above table summarizes those data which are available. Merchandise trade figures for 1938 are shown for comparison.

n.a. Not available

Source: International Monetary Fund

SWEDEN - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948	1947	1946	1938
Exports, f.o.b.	1,560.8	1,776.8	1,101.5	1,073.0	1,109.2	903.5	651.5	471.6
Imports, c.i.f.	-1,729.3	-1,776.0	-1,180.0	-1,106.0	-1,377.8	-1,457.3	-872.3	-526.6
Merchandise balance	-168.5	0.8	-78.5	-33.0	-268.6	-553.8	-220.8	-55.0
Transportation	207.5	187.2	115.8	151.0	177.9	166.8	158.1	53.2
Investment income	13.5	10.0	2.7	4.0	5.3	6.1	7.7	26.1
Government, not included elsewhere	-29.0a	...	-2.5	-1.0	-0.5	-2.5	2.3	-0.7
Other services		-17.2	-1.4	-6.0	-24.7	-17.8	22.4	-2.8
Balance on goods and services	23.5	180.8	36.1	115.0	-110.6	-401.2	-30.3	20.8
Capital movement (net)	1.5	55.2	-82.6	12.0	85.1	68.9	-105.8	0.3
Special official financing (net)	0.6	-11.4	5.4	-1.0	-11.7	-17.8	...	...
Compensatory official financing (net)	-50.5	-224.6	41.7	-133.0	17.2	338.1	131.3	-21.8
Errors and omissions	24.9	...	-0.6	7.0	20.0	12.0	4.8	0.7

Note: No sign indicates credit; minus sign indicates debit.

Because of the devaluation of the Kroner in September 1949, the U.S. dollar figures could not be derived directly from the figures in Kroner by applying a conversion rate. U.S. dollar figures for 1949 are reported by the IMF in the standard classification, showing a figure for "Official Grants" which apparently includes ECA grants and the utilization of OEEC drawing rights and EPU initial position. The net figure of $1 million for grants corresponds to the net figure of Kr. 8 million for the two types of transactions mentioned.

a Includes private remittances

Sources: League of Nations; International Monetary Fund

BELGIUM-LUXEMBOURG - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948	1947	1946	1937
Exports, f.o.b.	2,559.0	2,729.3	1,709.3	1,784.0	1,706.3	1,388.1	676.1	1,003.5
Imports, f.o.b.	-2,299.4	-2,336.4	-1,853.4	-1,656.0	-1,790.1	-1,817.4	-1,270.2	-979.7
Merchandise balance	259.6	392.9	-144.1	128.0	-83.8	-429.3	-594.1	23.8
Non-monetary gold movement (net)	2.4	...	2.9	-1.0	1.0	1.1	-.3	-12.2
Foreign travel (net)	a	-41.6	-28.1	-30.0	-47.9	6.7	5.4	24.8
Transportation	-98.5	-164.2	-103.5	-72.0	-81.9	-132.4	-86.7	-67.3
Other services	9.1	26.7	16.0	26.0	65.4	178.8	258.8	73.3
Balance on goods and services	172.6	213.8	-256.8	51.0	-147.2	-375.1	-416.9	42.4
Capital movement (net)	-117.5b	-27.9	-34.5	-49.0	84.2	301.7	254.9	16.1
Special official financing (net)	-37.3	-42.0	-6.4	-37.0	-34.1	-63.0	41.0	-31.7
Compensatory official financing	-31.6	-145.5	301.0	37.0	105.5	115.4	156.1	102.4
Errors and omissions	13.7	1.6	-3.3	-2.0	-8.4	21.0	-35.1	-129.2

Note: No sign indicates credit; minus sign indicates debit.

a Included in "Other services"
b Does not include "Donations" which are included in "Other services".

Source: League of Nations; International Monetary Fund

GERMANY, FEDERAL REPUBLIC - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948
Exports, f.o.b.	4,033.5	3,472.2	1,973.9	1,310.1	733.5
Imports, f.o.b. (1)	-3,496.2	-3,105.3	-2,540.4	-2,064.3	-1,805.2
Merchandise balance	537.3	366.9	-566.5	-754.2	-1,071.7
Transportation	-117.7	-240.6	-80.8	-131.0	41.9
Other services	144.8	24.3	7.8	5.5	0.6
Balance on goods and services	564.4	150.6	-639.5	-879.7	-1,029.2
Capital movement (net)	11.3	10.6	7.0	3.4	125.5
Special official financing (net)	-105.4	-37.2	-18.8	-184.9	-87.0
Compensatory official financing (net)	-491.0	-51.2	663.8	1,035.3	973.6
Errors and omissions	20.7	-72.8	-12.5	25.9	17.1

Note: No sign indicates credit; minus sign indicates debit.

(1) 1948, imports are c.i.f.

Source: International Monetary Fund

FRANCE (FRANC AREA) - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948	1947	1946	1937
Exports, f.o.b.	2,024	2,496	1,880	1,543	1,054	1,028	436	404
Imports, f.o.b.	-2,643	-3,266	-1,958	-1,999	-2,287	-2,292	-2,240	-798
Merchandise balance	-619	-770	-78	-456	-1,233	-1,264	-1,804	-394
Foreign travel (net)	)	77	141	121	70	9	-19	51
Transportation	)	-203	-96	-171	-262	-311	-246	55
Investment income	12)	-30	-25	22	57	86	72	154
Other services	)	-26	-30	-50	-74	-36	-91	-22
Balance on goods and services	-607	-952	-88	-534	-1,442	-1,516	-2,088	-156
Capital movements (net)	...	38	106	21	67	72	-3	92
Special official financing (net)	...	-130	-114	-55	31	47	-192	-4
Transactions of overseas territories (net)	...	-88	-123	-167	-208	-163	-297	...
Compensatory official financing	...	1,096	217	737	1,555	1,559	2,585	255
Errors and omissions	...	36	2	-2	-3	1	-5	-187

Note: No sign indicates credit; minus sign indicates debit.

Source: League of Nations; International Monetary Fund

ITALY - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948	1947	1946	1938
Exports, f.o.b.	1,374.9	1,639.5	1,243.5	1,162.2	1,170.1	680.4	416.0	423.6
Imports, f.o.b.	-2,103.0	-1,914.6	-1,359.5	-1,380.5	-1,462.4	-1,311.6	-1,025.0	582.0
Merchandise balance	-728.1	-275.1	-116.0	-218.3	-292.3	-631.2	-609.0	-158.4
Foreign travel (net)	75.0	71.9	66.8	34.4	23.9	6.4	2.0	68.8
Transportation	-56.3	-104.0	-62.2	-100.9	-111.7	-156.9	(...	-3.6
Investment income	-12.9	-7.3	-9.5	-15.7	-12.3	-4.9	(1.0	-8.4
Other services	91.2	45.8	41.8	80.1	79.5	16.9	(...	-11.7
Balance on goods and services	-631.1	-268.7	-79.1	-220.4	-312.9	-769.7	-606.0	-113.3
Capital movements (net)	357.1	282.4	72.5	274.6	289.3	249.3	34.0	37.6
Special official financing (net)	-70.3	-96.1	-93.6	9.6	-17.9	-11.1	4.0	...
Compensatory official financing	322.3	66.1	288.4	-61.2	75.9	521.0	669.0	16.7
Errors and omissions	21.7	16.3	-188.2	-2.6	-34.4	10.5	-101.0	59.0

Note: No sign indicates credit; minus sign indicates debit.

Source: International Monetary Fund

JAPAN - BALANCE OF PAYMENTS

Millions of U.S. Dollars

	1952	1951	1950	1949	1948	1947	1946	1936
Exports, f.o.b.	1,289.3a	1,581.9	912.5	533.3	262.3	181.6	65.3	1,034.9
Imports, c.i.f.	-2,048.4	-2,003.1	-1,011.1	-909.1	-669.8	-538.0	-339.9	-1,049.3
Merchandise balance	-759.1	-421.2	-98.6	-375.8	-407.5	-356.4	-274.6	-14.4
Non-monetary gold movement (net)	5.6	4.4	3.8	2.9	2.6	1.8	1.6	...
Transportation and insurance	184.2	128.3	42.3	17.0	3.0	1.0	.4	68.4
Investment income	...b	-5.3	-5.6	-1.3	-2.2	-3.4	...	50.8
Government operations, n.e.c.	827.7	392.4	62.4	48.6	18.8	...	...	-37.8
Other services	-26.3	53.6	42.4	2.2	-1.5	-1.4	...	3.5
Balance on goods and services	232.1	152.2	46.7	-306.4	-386.8	-358.4	-272.6	70.5
Capital movements (net)	66.4	52.2	60.1	...	.6	.4	1.6	-49.9
Special official financing (net)	-112.8	-2.5	-.2	-35.9	...	...	17.5	-7.0
Compensatory official financing	-184.0	-211.7	-108.0	353.2	359.3	344.4	256.0	-6.9
Errors and omissions	-1.7	9.8	1.4	-10.9	26.9	13.6	-2.5	-6.7

Note: No sign indicates credit; minus sign indicates debit

a Excludes United Nations special procurement goods which are included in "Government Operations, NES".
b Included in "Other services".

Source: League of Nations; International Monetary Fund

WHO WOULD BENEFIT MOST FROM FREER TRADE?

(A representative of The Conference Board just back from an extended tour of Europe makes the following report on the possibility of loss of potential United States and other foreign markets by British, French and other Allies to Germany and Switzerland, with the result that the "Trade not Aid" program would not provide permanent relief to our World War II Allies.)

The spectacular comeback staged by Western Germany's export business in the past four years has been one of the outstanding features of international trade. From $699 million in 1948 German foreign sales rose successively to $1,123 million in 1949; $1,981 million in 1950; $3,474 million in 1951; and $4,037 million in 1952. Swiss exports also have been substantial in the post-war era: in the same five years they increased from $799 million to $803 million, to $905 million; $1,078 million, and to $1,100 million. By comparison, Germany (i.e. all of Germany at that time) exported $2,257 million worth of goods in 1938, and Switzerland $301 million.

German as well as Swiss export totals, however, must properly be viewed against the background of a general rise in export values from which all West European industrial countries have profited. For all member countries of the OEEC the aggregate exports rose from $9,412 million in 1938 to $27,187 million in 1951 and $27,144 million in 1952. Foreign shipments of the United Kingdom in these three years were $2,603 million, $7,578 million and $7,541 million respectively. French exports advanced from $875 million in 1938 to $4,225 million and $4,047 million in 1951 and 1952. Exports from Belgium-Luxembourg went up from $732 million to $2,633 million and $2,437 million, and so forth. American exports, incidentally, up from $3,057 million in 1938 to $14,868 million and $14,928 million in 1951 and 1952 moved ahead at an even faster clip.

Thus, thanks to the rise in export prices and the expansion in world trade volume, all major industrial countries today have larger exports than they had before the war. It is only that in the case of Western Germany (but not in that of Switzerland) industrial recovery started relatively late, namely after the 1948 currency reform. Consequently the increase in exports, further stimulated by the outbreak of the Korean war, began at a time when other countries had already been able to score major gains; it developed during a shorter period of years, and it has also gone on after other countries reached (and passed) their peak. While available German foreign trade figures point to an additional increase in exports this year, it will probably be on a smaller order than that achieved between 1951 and 1952.

It is not surprising that the amazing recovery of Germany's export trade after its virtual eclipse in the immediate post-war years should have caused much speculation as to what German competition may do to the export potential of the principal competitors. Concern has frequently been expressed, especially by British and French manufacturers, over the possibility that Germany might go from strength to strength, and such concern seems to center around overseas rather than European markets, though, of course, not

entirely so. This preoccupation with overseas markets evidently stems from the fact that European manufacturers, particularly makers of capital goods, regard territories like Latin America and the Near and Middle East as the most promising markets for future years. Opinions on the extent of the German "threat" (one does not ordinarily meet with similar concern regarding Switzerland's export prospects) vary sharply; the question is also asked, however, whether Germany's come-back can be considered complete before she has regained the share of world markets which she held before the war, and whether and when this event may occur. The Germans themselves, in fact, are apt to emphasize that they now account for a substantially smaller slice of world trade than in the pre-war period.

The fears of Germany's European competitors at present are relatively slight where the American (United States) market is concerned. At the moment, actual competition is probably keenest in the Central and South American countries, and on occasion also in the Near, Middle and Far Eastern markets. The latter, though, tend to be regarded more by way of a long range proposition rather than a major export territory at this time. Meanwhile, German exports to West European countries, i.e. members of the European Payments Union, amounted to slightly less than 60 percent of all exports in both 1951 and 1952, and are running at a rate just under 60 percent this year. German electrical exports also were 60 percent to Western Europe in 1952, compared with 65 percent in 1951, but less than 50 percent in 1938.

The United States Market

There can be little doubt that German exports to the United States have displayed considerable strength in recent years, if viewed against the background of pre-war shipments. Faced with the necessity of paying for dollar imports and closing the dollar gap the Germans like other European countries have gone to considerable trouble to expand their sales to the United States, and their efforts have met with a measure of success. Even so, the American trade is only a small fraction of Germany's exports today. In 1938, German exports to the United States totaled $65 million, or barely 3 percent of the total foreign shipments of $2,257 million. In 1951, following an extensive "dollar export drive", German exports climbed to $229 million out of a total of $3,474 million, or slightly in excess of 6 percent. Last year, German exports to the United States amounted to $250 million out of $4,037 million, again just over 6 percent.

Talks with German businessmen indicate their belief that, given lower American customs tariffs, they can increase their sales here, especially in the fields in which they already operate, such as toys, porcelain, and cameras. They realize, however, that these are somewhat limited markets and they believe that there is little hope of their breaking into major American mass consumer goods markets. Nor do they appear particularly anxious to enter the American capital goods field beyond what might be described as occasional forays. Their general attitude in this respect seems to be that the American market is too highly competitive at all times. They believe that other markets, such as Latin America, for example, are more promising. They possess few of the sales and service organizations in this country which a major sales campaign for capital goods requires, and it would be costly to set them up. Fears as to the effects of a possible American recession on such export

business is an additional factor. These fears are also held with regard to many of the consumer goods now shipped to the United States, because many of them are high quality, if not luxury, goods which, it is thought, would be the first to suffer from any business decline in the United States.

German exports to this country are now at a higher rate than before the war, but this does not appear to have been to the detriment of, say, British or French sales here. British exports to the United States, in fact, have risen a little faster since the war than United Kingdom exports generally. This has not been quite the case with French exports, but there is no indication that German and French goods here, or for that matter German and British goods, have been in intense competition or are facing such competition in the near future.

The Latin American Market

Conditions in Latin America are rather different. Latin America was a major export territory for Germany before the war. A substantial German recovery has occurred there in the past few years. There is a tendency, evident in conversations with German and other West European manufacturers, to regard the area as a "privileged hunting ground" for Germany, although others do not necessarily accept this as the final word. Furthermore, the Latin American market since the war has become to a far greater extent a market for capital goods and the scene of major investment projects. It promises to remain so for years to come, and as such is probably of even greater interest than previously to the major industrial countries.

An indication of this is given in the 1951/52 Economic Survey on Latin American economic conditions which was prepared by the Economic Commission for Latin America of the United Nations Economic and Social Council. During 1951, this survey states, the volume of West European exports to Latin America was some 20 percent above that of the first half of 1950. Indeed, the volume of electric motors and machinery, machine tools, textile machinery, tractors, rolling stock and other capital exports was well over 30 percent higher even though, as in the last quarter of 1951, some declines were apparent.

There were, however, important changes in the source of imports from Europe. Those from the United Kingdom recorded a lower level than in 1950. In part this was due to declines in British output, but it also took place because a larger share of British exports was directed to Sterling area countries, many of which had been accelerating their programs of economic development. These tendencies were also noticed in the trade of other European countries, e.g. France, Belgium, Italy whose 1951 exports to Latin America rose at a slower rate than those shipped to the Sterling area.

The most notable exception, the survey continues, was Germany. Her trade with Latin America rose rapidly throughout 1951. While the aggregate German export volume in 1951 rose by some 43 percent over 1950, exports to Latin America almost doubled. This was possible because Germany, while utilizing hitherto underemployed output capacity, was also entering into credit arrangements with several Latin American republics. In 1951, Germany's trade recovery accounted for more than half of the total increase of European exports to Latin America.

In 1952, however, this trend did not continue. European exports to Latin America decreased, due both to the lack of industrial capacity (especially for capital goods output, even though this was not always true in the case of Germany) and because of continued shortages of certain raw materials. In other cases, particularly that of Germany, exports fell slightly because of import restrictions in Latin America and the reduction in credit facilities.

It may be added here the latest German trade figures published by the Bank deutscher Laender show that German exports to Latin America continued to decline moderately in the first half of 1953, down from $182 million in the first six months of last year to $173 million this year. While this may be largely accounted for by lower German export prices, there is considerable concern over the drop, from the first half of 1952 to the first six months of 1953, of German imports from Latin America from $154 million to $101 million. It is realized in Germany that in the long run exports cannot exceed imports by such a substantial margin.

The fact that the rapid rise of German exports did not continue after 1951 is no proof, of course, that it may not be resumed at a later time. Meanwhile, however, it is doubtful whether Germany can be said to have regained all the ground she lost during and after the war. Exports to Brazil, for instance, accounted for 4 percent of Germany's export trade last year, compared with less than 3 percent in 1936. In the case of Argentina, however, the 1952 percentage was about the same as in 1936, and for Chile and Mexico it was actually smaller. (Switzerland, incidentally, sent 7 percent of her foreign shipments to those four countries last year, against only 5 percent in 1936.)

On the other hand, there is the fact that Germany which in 1938 shipped roughly 30 percent of the total exports of the OEEC countries to Latin America, contributed only 13 percent of such exports in 1951, and a little over 17 percent last year. Moreover, Latin American purchases from the United States which in 1938 had been just under one half of those effected in the OEEC countries, last year exceeded imports from all the OEEC members by about 80 percent. Switzerland contributed 4 percent of all Latin American imports from OEEC countries in 1951, and 3½ percent in 1952, against only 2 percent in 1938, but it must be added that the Swiss share had been as high as 7 percent in 1948 and still over 5 percent in 1950.

European businessmen all appear agreed that the Latin American market has become highly competitive in the past two years; the deterioration in Latin America's ability to pay for the goods imported is in part responsible. As regards capital goods, this lends even further emphasis to what in such transactions has always been very important, namely the credit terms which the would-be supplier of this type of goods can offer to the potential customer. According to most English manufacturers, satisfactory credit terms now are far more important in securing large orders than the actual price, and short delivery periods rank second only to credit terms. A similar belief is reflected also in the uneasiness of German manufacturers over their capital shortage which makes it difficult for them to offer attractive credit terms; time and again during recent years businessmen and trade associations have urged the Government to raise additional funds which would enable exporters to make better credit facilities available to purchasers of capital goods in overseas countries.

The Near, Middle and Far Eastern Market

If the Latin American market is valued highly because of its future potential, as distinct from the volume of current business, this applies even more so to the Near, Middle and Far East market. Here, too, Germany has been able to reassert herself during the past few years. Immediately after the war, German trade with these areas was very small, and it was not until after 1949 that a substantial increase set in. Malaya, Indonesia, Pakistan, India and Ceylon became the chief sources of supply, and India, Indonesia and Malaya were the chief markets for German products. The recovery of German trade was even more marked in 1951 than in 1950. In the Near Eastern countries also German exports have scored substantial gains, although the volume of all these sales is relatively small still, if compared with German exports generally.

The significance of German exports to the so-called ECAFE countries, namely India, Pakistan, Ceylon, Burma, Malaya, Indonesia, Thailand, the Philippines and Hongkong, lies largely in the fact that an unusually high percentage of these shipments consists of heavy industrial goods. This was true in the years before the war, and it has again become true since then. As noted by the Economic Commission for Asia and the Far East of the United Nations Economic and Social Council in its preliminary report on trade between the ECAFE region and Europe (December 31, 1952), heavy industrial items accounted for more than 80 percent of German exports to the ECAFE region in 1938. The same items constituted only about one-third of France's exports to that region, less than one-third in the case of the Netherlands, and 46 percent of those of the United Kingdom. In the postwar years, there has been a marked increase in such products in United Kingdom exports from 46 to 63 percent in 1951, but Germany, despite the previous high level, was able to step up the percentage of heavy industrial goods still further to 88 percent in that year. In the case of France and the Netherlands, no change took place. (Heavy industrial goods, according to the report, include such items as metals, machinery, vehicles and other transportation equipment and chemicals.)

As of 1951, German exports to this area were still below one-fifth of the volume of United Kingdom shipments, and the total German export volume was not as high as it had been in 1938, namely $216 million against $259 million at constant prices. British exports, on the other hand, had gone up from $683 million to $1,175 million. The report comes to the conclusion, however, that German prospects in this region appear very bright.

Since then, nothing has happened which would cast doubt upon this statement. Germany has been able to initiate, or to participate in, several major investment projects, such as for instance the setting up of a huge steel mill in India which is to be undertaken by two German companies, the DEMAG and the Friedrich Krupp A.G. Similar projects have also reached a more or less advanced stage of preparation in several other countries, e.g. Pakistan and, further to the West, in Egypt. It seems certain that in this region Germany will present an increasingly important challenge to the United Kingdom which until now has dominated the export business. There is little indication, however, that other countries, such as Switzerland, will similarly threaten the position of the United Kingdom, although they may, of course, secure an important order now and then which British manufacturers may have coveted.

Two other points might be mentioned. In the first place, the rising oil revenue which many Near and Middle Eastern countries now enjoy may well enable them to increase their purchases of both consumer and producer goods, and Germany is certain to benefit from such additional buying, all the more so because she buys about 90 percent of her imported oil in these countries. Secondly, the reparations deliveries which Germany has undertaken to send to Israel over the next few years may well help to establish German goods in the Near East; there will also be a tendency in Germany to trade as much as possible with the Arab countries to counteract any antagonism which the Israel Reparations Agreement has evoked in those countries.

In the Near, Middle and Far Eastern markets the extent of German capital goods deliveries in the next few years will, of course, be in part determined by such credit facilities as the German manufacturers and exporters can make available.

LOSS OF MARKETS NOW BEHIND THE IRON CURTAIN

Trade of Western European (and other) countries with the countries behind the Iron Curtain undoubtedly has fallen off sharply in the post-war period, and this decline has become more marked in recent years as the gulf between the West and the East has widened. However, even in the years before the war, business the Soviet Union and her (now) satellites, to wit Bulgaria, Czechoslovakia, Hungary, Poland and Rumania, averaged only a relatively small share of total foreign trade of Western Europe. There were exceptions to this pattern, chief among them Germany which, especially in the thirties, transacted a considerable volume of trade with her Eastern neighbors.

While a comparison of West European exports and imports in 1937 and 1938, with those in 1951 and 1952, indicates a substantial rise in values, and to a lesser extent also in volume of goods shipped, export and import business with the Eastern countries not only has failed to keep step with these increases, but has actually dropped absolutely.

Exports of West European nations now belonging to the OEEC (all subsequent figures, unless otherwise stated, taken from OEEC trade statistics) amounted to altogether $10,271 million in 1937 and $9,412 million in 1938. By 1951 and 1952 they had risen to $27,187 million and $27,144 million respectively. Exports to the Soviet Union and her satellites (to which presumably a certain amount should be added for illegal transactions) were down to $720 million and $700 million in 1951 and 1952, against $807 million and $704 million in 1937 and 1938. Thus, from about eight percent of West European exports before the war shipments to Russia and her satellites declined to little more than 2-1/2 per cent in the past two years.

Imports tell the same story. In 1937 and 1938 purchases of the (now) OEEC countries from the Eastern states amounted to $1,194 million and $921 million, representing slightly more than eight per cent in one year, and slightly less than eight per cent in the other of their total imports of $13,970 million and $12,739 million. In 1951 and 1952 comparable imports were only $899 million and $837 million, or somewhere between two and three per cent of their overall imports of $33,690 million and $32,298 million in those two years.

In the case of Germany, which immediately before the war did more trade with the Eastern countries than any other OEEC member, the decline in the post-war years has been more pronounced. In 1937 and 1938 German exports amounted to altogether $2,374 million and $2,257 million, of which $299 million and $283 million respectively went to the East, or about 13 per cent in each year. By 1951 and 1952, German exports had dropped to $64 million and $50 million respectively, i.e. less than two per cent of the $3,474 million worth of goods shipped abroad in 1951, and little more than one per cent of the 1952 export total of $4,037 million. Post-war figures, of course, apply only to Western Germany, and there is no doubt that additional deliveries, perhaps very substantial ones, reached the Soviet Union and the satellites from Eastern Germany in these years. Nevertheless,

it appears certain that Germany i.e. the Federal Republic of Western Germany, has lost an important market for her products.

To a lesser extent, this also applies to most other OEEC countries. It can even be argued that in the most "favorable" case, that of Sweden, the slight percentage gain achieved over pre-war trade has been so small as to be devoid of significance. In 1937 and 1938, Swedish exports to the six East European countries totaled $29 million and $30 million respectively, or just under and just over six per cent of Sweden's entire exports in these two years. By comparison, Sweden was able to ship $125 million worth of goods to the East in 1951, and $118 million in 1952, a little over seven per cent of her total foreign sales in each year.

Regarding other West European countries, the value of British as well as French exports to the Soviet Union and the satellites last year was lower than in either 1937 or 1938, and also accounted for a much smaller share of British and French foreign sales in pre-war years. The value of Dutch exports was about the same last year as it had been just before the war, and Belgian and Swiss shipments were slightly up. In none of these three countries, however, had exports to the East kept step, even remotely, with the overall expansion of foreign trade.

What is true of export trade in general also appears to apply to exports of electrical products. This, at least, is borne out by the statements of various English and German manufacturers, as well as by the export figures published by the German Central Association of the Electrical Industries. According to the latter, electrical exports to the East amounted to RM 51 million in 1938; this figure includes shipments to Lithuania, Latvia, Estonia and Danzig which have since been incorporated in either the Soviet Union or Poland. The 1938 electrical Eastern exports corresponded to just over 15 per cent of the German electrical export total of RM 336 million for that year. In 1951 and 1952, however, electrical exports to the East aggregated DM 18 million and DM 21 million respectively (DM 100 equal $23.80), out of total electrical exports of DM 530 million and DM 776 million. Thus, much like overall exports, shipments of electrical goods to the East had declined to slightly over three per cent in one year, and slightly under three per cent in the other. Spokesmen of the Central Association are of the opinion that deliveries in the past few years have included little else but spare parts and accessories for installations and equipment sold to the East by Germany in the years before the war.

In the case of the German electrical industry more than that of other West European countries an additional problem arises. Before the war, the Eastern zone of Germany held extensive production facilities in this field, about 15 per cent of German electrical capacity altogether. To this must be added such capacity as may have been installed since then, reported to be substantial, plus such capacity as either existed or has since been constructed in the Eastern sector of Berlin. Without this alternative capacity within the Soviet orbit, the countries behind the Iron Curtain might have had to make greater calls on the electrical industry in the West, particularly in Western Germany. Conversely, even if no limitations or restrictions had been placed on East-West trade, the East

German plants would still have reduced the volume of business available to the West German companies. (In this connection it might be added that unification of Germany would, of course, create a totally different situation in the electrical manufacturing field, and that German producers are aware of, and a little disturbed over this possibility. Needless to say, it is not a situation confined to the electrical industry.)

It is impossible to determine, what potential business and business opportunities were lost to Western Europe by the cutting off of Eastern Europe. It can in fact be argued that in many cases with production facilities fully utilized, the losses so far have been paper losses rather than actual ones, and that many countries, moreover, have been able since the war to adjust their economies entirely to the absence of the East European markets. In the case of Germany, however, it would be difficult to maintain this argument, as Eastern Europe obviously constituted too important a market before the war. Also, it appears likely that given free and untrammeled access to Eastern European countries Germany would have been in a better position to avail herself of business opportunities there, owing to her geographical advantages.

It is equally impossible to state how Western European trade with the Chinese mainland might have developed under different political conditions. Two pertinent facts, though, emerge from data contained in the August 1953 Economic Bulletin for Asia and the Far East, published by the United Nations. First, production of principal industrial commodities, such as iron and st el, coal, oil cement, etc. rose sharply in 1951 and 1952; in the latter year output of 35 major industrial products rose to an average of 126 per cent of the pre-1949 peak, as compared with only 56 per cent in 1949. Thus, it can be presumed that extensive deliveries of capital goods were required and procured by China in the past few years, and it is likely also that this demand continues unabated.

Secondly, China's foreign trade appears to have switched predominantly to the Soviet Union and the East European satellites. While estimates of her trade with other countries indicate that her exports dropped from $473 million in 1951 to $334 million in 1952, and her imports from $440 million to $152 million, it must be remembered that trade outside the Communist orbit now represents only a small fraction of China's foreign business. The Soviet Union and the East European countries, which before the war contributed less than one per cent to China's total trade, last year accounted for more than 70 per cent thereof. It is not unreasonable to assume that under a different political constellation a substantial part of this business would have been transacted with the industrial countries of Western Europe.

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ECONOMIC CONSEQUENCES OF ALTERED COLONIAL RELATIONSHIPS

Trade between pre-war colonial powers and their then possessions overseas has undergone considerable change in the years since the war. Frequently this has been to the disadvantage of the mother country. Trade bonds have remained much closer where the colonial status has not been upset than they have where relationships have undergone marked change. This is true of the Belgian and French overseas territories, and in the case of British and Dutch possessions which have not been detached.

Changes in colonial status, however, clearly furnish only one reason for the different trade structure now existing between former mother countries and their erstwhile possessions. The trend towards industrialization in many overseas areas is another factor responsible for the change. Frequently, the result has been a smaller demand for consumer goods customarily bought in the mother country and a corresponding increase in capital goods requirements which at times may have exceeded the mother countries' ability to deliver. The simultaneous emergence of the United States both as an exporter and as an importer on a much bigger scale than before the war has also tended at times to deflect trade from its former channels. The availability of special dollar funds, American technicians, etc. have presumably worked in the same direction.

The decline of trade between mother countries and their former colonies at times seems to have been the continuation of a trend started many years previously. Indonesian imports from Holland, for instance, began to decline relatively at the time of the first World War.(1) In 1913, Holland accounted for 36 per cent of the Dutch East Indies' imports, but in the twenties and early thirties this share declined steadily, first to 20 per cent in 1929 and subsequently to 13 per cent in 1935, owing largely to the open door policy pursued until then by the Dutch colonial authorities. Special measures taken to keep out the flood of Japanese imports succeeded in raising the Dutch share to 22 per cent by 1938. After the war, however, the decline set in again, and this time, of course, Indonesian independence precludes any legal counter-measures on the part of the Dutch.

Year by year changes in business conditions, more particularly the ups and downs of import and export prices and the alterations in the "terms of trade" also appear to have had a considerable effect on the volume of trade between mother countries and colonial territories.

Naturally, conditions have varied substantially from one area to another. Where the exchange of goods today is smaller than it was before the war, the decline invariably has been relative rather than absolute. The value of exports and imports is in every case now larger than it was 15 or 16 years ago, thanks to higher prices on the one hand and the expanding volume of world trade on the other.

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(1) Economische Vorlichtingen, August 21, 1953, p.14,15.

There have been factors also in the post-war world which have helped to strengthen rather than to weaken trade bonds between the mother country and the overseas territory. Dollar shortages may have forced the would-be overseas customer to turn to the mother country (within the same currency area) instead of to another supplier although for political or emotional reasons he may have been reluctant to do so. In the case of India, Pakistan, Ceylon, etc. and, of course, of other Commonwealth members the availability of large sterling balances in the United Kingdom which had been accumulated during the war, combined with the much higher prices they could obtain for their raw materials, led to a sharp post-war increase in purchases made in the United Kingdom which was not matched by a corresponding expansion of United Kingdom imports from the overseas sterling area. The volume of United Kingdom imports from the overseas sterling area in 1949-50 was only eight per cent above the average volume for the years 1934 through 1938, whereas United Kingdom exports to the overseas sterling area were up 65 per cent. In the case of many specific goods, the post-war increase in exports was even substantially higher. United Kingdom machinery exports to the overseas sterling area in 1949-50, for instance, were up 139 per cent from the 1934-38 average, and these shipments to the overseas sterling area accounted for 52 per cent of all machinery exports.

Considerations of a special nature operate in the electrical equipment field. Repair and replacement purchases for existing installations tend to be made in the country which carried out the original installation. Thus, the introduction of British equipment in India before the war would naturally create certain lasting advantages for British electrical manufacturers despite the political changes taking place since.

The deterioration of the investment situation may be of more significance in the long run than the immediate changes in the volume of exports and imports. Britain and Holland especially have seen a rapid shrinking of their investments overseas, the earnings from which provided them with the means to pay for their former trade deficits. There can be little doubt that the shrinking of these investments has been due, in part at least, to the severance of political ties. British investments in India and Pakistan, for instance, declined by 319 million pounds sterling or 82 per cent between 1938 and 1948(1), whereas British investments in the Commonwealth generally dropped by only 43 per cent during the same period. Dutch investments abroad, a large section of which was placed in Indonesia, either had to be liquidated in the post-war years, or else lost value as a result of political tensions.(2) Dutch revenue from foreign investments which had averaged 400 million guilders annually in the late twenties, dropped to 162 million in the 1934 crisis year, was 132, 215 and 163 million guilders respectively in 1948, 1949 and 1950, or between 50 million and 70 million guilders in 1938 purchasing power.

In addition, considerable difficulties are now encountered in maintaining existing investments in Indonesia. As pointed out by the Dutch Foreign Ministry (3), efforts are now under way in Indonesia to nationalize existing foreign enterprises, to set up new state-operated enterprises, and to give financial support only to newly established private Indonesian enterprises. Moreover, the transfer of certain interest and dividend payments has already been restricted, and there exists a danger of even further limitations.

(1) U.K. Overseas Investments. 1938 - 1948 (Bank of England)
(2) Economisch-Statistische Berichten, November 1951
(3) 1952/53 Yearbook of the Dutch Foreign Office

Likelihood of new investments in the overseas territories is, as a result, greatly reduced. Exporters, especially exporters of capital goods and equipment, must thus forego the considerable support which such investments would ordinarily give to the national economy of the mother country. There may be attempts also to turn to other areas - in the case of Holland to under-developed countries and perhaps the British dominions - as potential outlets for future investment activities, provided economic conditions at home make capital exports feasible.(1)

While the modification in colonial status may have affected both the volume of mother country exports to and imports from the former colony, the effect has probably been more pronounced on exports. There is little evidence to show that access of European countries to raw materials in their former overseas possessions has been limited by factors other than their ability to pay.

The above-mentioned casting-around of the Dutch (and possibly of others) for alternative investment fields also raises an additional possibility. Deprived of the dominant position which it formerly held as an exporter to its own colonies, a country may redouble its efforts to establish itself in other markets. Holland, for instance, has been very successful in the past three years in stepping up exports to countries like India, Pakistan, and Ceylon. Conversely, a country like France which has been able to maintain and even expand the flow of shipments to her overseas possessions, may at times regret the fact that this might preclude the possibility or feasibility of opening up new outside markets. The fact that French Metropolitan exports to overseas possessions which in 1949 and 1950 accounted for 136 and 138 per cent respectively of imports from these areas (2) rose even further to 163 per cent of imports in 1951 (a relative as well as an absolute increase) did not give rise to a surplus available for covering trade deficits incurred vis-a-vis any other country.

As and when the animosity abates which existed in the colonial territories in the years preceding and immediately following their gain of political independence, trade relations may once again become closer than they are now. This belief appears to be held by many Englishmen with respect to India. It is based on the fact that in the six years since the partition trade has not decreased as much as had originally been anticipated. Before the partition, India bought 73 per cent of her capital goods in the United Kingdom. At present the rate is 41 per cent but the trend appears to be up, according to the Chairman of the British Engineers Association. It is said in some quarters that being used to British ways and systems, India will gradually draw closer to the British again. In Holland, too, it has been noted that after the Dutch quota of Indonesian imports declined successively from 21 per cent in 1949 to 17 per cent and 12 per cent in 1950 and 1951, it began to rise slightly to 14 per cent last year.

Even so, the decline of Dutch exports to Indonesia still stands out as among the most marked in the mother country - colony relationships. Indonesian deliveries to Holland, on the other hand, have remained much more constant. They made up about 21 per cent of Indonesia's (Dutch East Indies)

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(1) Economisch-Statistische Berichten, November, 1951
(2) Etudes et Conjoncture - Economie Francaise, 1952, No. 2, p.166

exports in 1938, and they were again between 21 and 22 per cent in both 1951 and 1952.(1) Indonesian purchases from the United States, by contrast, climbed from under seven per cent of all imports in 1938 to over 17 per cent in 1952. Increased dollar earnings since the latter part of 1950 and dollar receipts from United States Aid Programs made it possible for Indonesia to pay for the large imports.(2)

There has also been a substantial decline in Indian imports from the United Kingdom, compared with pre-war ratios. From just over 30 per cent of all imports in 1938 they dropped to slightly more than 20 per cent in 1950 and to less than 17 per cent in 1951. Indian exports to the United Kingdom also declined from 34 per cent of all outgoing shipments in 1938 to about 23 per cent in 1950, but rose somewhat to 26 per cent one year later. While Indian sales to the United States have remained lower than those to the United Kingdom, purchases from the United States which in 1938 were barely one fifth of imports from the United Kingdom, were almost as large as imports from the United Kingdom by 1950, and exceeded them by roughly 80 per cent in 1951.

No pre-war figures exist for Pakistan. Ceylon, however, has not changed much as an export market for British goods generally. A little more than 20 per cent of Ceylon's imports came from the United Kingdom in 1938, and this ratio was still the same in both 1950 and 1951. Ceylonese exports, of which more than one half went to the United Kingdom in the pre-war year, but less than 25 per cent in 1950, developed differently, though in 1951 shipments to the United Kingdom once again went up to 33 per cent of all exports. American trade with Ceylon lagged well behind that of the United Kingdom, on both the import and the export side, in all these years. In Burma also the United Kingdom has maintained its position as a supplier with 20 per cent more or less of Burma's total imports both before and after the war. Only five per cent of Burma's exports, however, went to the United Kingdom in 1951, compared with nearly 15 per cent in 1938. In Burma Japan has emerged both as a major supplier and customer, having done very little business with that country in 1938.

By contrast, trade ratios between France and Belgium on the one hand and their colonial empires on the other are not only considerably higher, but in some cases they have actually gone up since the war. Of Indo-China's imports, for instance, 54 per cent was supplied by France in 1938; both in 1950 and 1951 about 76 per cent of all imports was French. France also took just over 45 per cent of Indonesia's exports in 1938, but this declined to about 38 per cent in 1951. Both on the export and on the import side the United States share of the Indonesian market remained rather small.

This has not been so in the case of the Belgian Congo where imports from the United States increased from eight per cent in 1938 to almost 25 per cent in 1952, and where exports to the United States advanced from a little over one per cent to nearly eight. This, however, does not appear to have affected the substantial Belgian share in this market to any large extent. About 47 per cent of all Congo imports came from Belgium and Luxemburg in 1938, and in 1951 and 1952 Belgian-Luxemburg products still accounted for 40 per cent more or less of all Congo purchases abroad. Of the Congo's exports, though, only 43 per cent went to Belgium-Luxemburg last year against about 83 per cent in 1938.

(1) All subsequent figures, unless otherwise stated, are taken from the 1952 U.N. International Trade Statistics Yearbook.
(2) U.N. Economic and Social Council: Preliminary report on Trade between the ECAFE region and Europe.

GOTTFRIED HABERLER

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It is well known that economic recovery in Western Europe after the war as measured by real output and income has been fairly satisfactory and rapid. In every country (with the sole exception of West Berlin) industrial production is well above that before the war - in Western Germany where recovery had a much later start 20 per cent, and for the rest of Western Europe about 50 per cent above the 1938 level.

Total output has risen less, because agricultural production was slower to recover. Real national income per capita of the population has risen still less for the following reasons: growth of population, losses of overseas investment income (estimated by the Economic Commission for Europe at about 1 per cent of the aggregate product of Western Europe), and deterioration in the terms of trade averaging (in 1951 as compared with 1938) about 3 per cent of the product of the whole area. Taking these factors into consideration ECE estimates that real national income per capita of population in 1951 was still lower than before the war in Western Germany, equal to pre-war income in Italy, less than 10 per cent higher in the Netherlands, 10-15 per cent higher in the United Kingdom, France and Denmark, 20 per cent higher in Switzerland, 25 per cent higher in Belgium, over 30 per cent higher in Sweden.

Real private consumption per capita which we may take as a rough index of economic welfare has gone up still less because a larger part of the national product is being invested or used by governments for unproductive (including military) purposes. It is impossible to give a concrete figure for average private consumption but it is probably a little higher than before the war on the average, although somewhat lower for some countries. The great change in the income distribution (in the direction of greater equalization) which has taken place in many European countries makes comparison difficult with that before the war.

* * *

It is equally well known, however, that Europe's balance of payments is not as satisfactory as the recovery of output and national income. True, here too great progress has been made. The current deficit of Europe with the dollar area has been sharply reduced from about $7 billion in 1947 to something between $2 and $3 billion in 1952. (These are the figures given by the Organization for European Economic Co-operation. The exact size of the deficit depends on the classification of some doubtful items and is probably smaller than the figure indicates. But as a measure of improvement the quoted figures are acceptable.) But there is still an uncomfortably large dollar gap. Moreover, the situation is precarious inasmuch as the dollar reserves of most European countries are insufficient to take care of even a moderate widening of the gap which may easily occur, and the gap would be much larger, if uneconomic and discriminatory trade restrictions were removed.

Now, I am not going to forecast what actually will happen. Many things may happen which would interfere with the adjustment process that cannot be foreseen. There may be a new flare-up of inflation abroad or simply a letup in disinflationary policies; there may be a recession in the United States, and even a very mild one would have most serious repercussions on the balance of payments; there may be a recrudescence of import restrictions in the United States, especially in case business activity began to slip from its present high level.

But I do not want to engage in the morbid game of enumerating everything that may go wrong; it would be easy to think of all sorts of policies and accidents that would immediately result in a widening of the dollar gap. Let us assume that these mistakes are avoided; that the guards against inflation abroad are not let down but strengthened where necessary; that barriers against imports in the United States are reduced, at least not raised; and that a recession in the United States is avoided.

Under these conditions I see no reason why the European balance of payments should not continue to improve and payments equilibrium be achieved speedily.

From: "International Economic Outlook" - Proceedings of the Academy of Political Science, May, 1953

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It had become apparent by early 1949 that the postwar rise in output could not be relied upon to alleviate, by itself, the balance of payments disequilibria so long as exchange rates remained "overvalued" in terms of the dollar. After this situation had been ended by the widespread devaluation of most nondollar currencies in the fall of 1949, not only did the competitive position of exports from the devaluing countries to dollar and other markets improve, but because of the rise in local-currency prices of goods from the dollar area, imports from the United States were effectively discouraged. Certain serious distortions that have developed in more recent years in international price and cost relationship still remained to be corrected in mid-1953; but in contrast to 1949, these were confined to a few countries.

The recent improvement in the international payments position seems therefore to have been of a sturdier character than the earlier recovery from October 1949 to June 1951. In the first place, the recent rise in gold and dollar holdings has not, as in certain countries after the outbreak of hostilities in Korea, been at the cost of a general depletion in raw material stocks. Secondly, the recent improvement, in contrast to that of 1950 and early 1951, has been accomplished without a rise in prices of primary commodities originating in the sterling area; such prices are now at about the level of mid-1950. In addition, the economies of Western Europe, Canada, and the United States have been operating at (or close to) all-time record levels, despite the subsidence of the inflation-nurtured boom in much of Europe and in the primary-producing countries, as well as in North America. Furthermore, the ability of the Western European and Canadian economies to cope with the problem of transferring resources to dollar-earning or dollar-saving tasks has been enhanced by their increased reliance both upon controls over the availability and the cost of credit and upon the price mechanism; the structure of prices, particularly in Western Europe, is also more competitive today than five years ago. Finally, the stretching out of rearmament programs has reduced the pressure on certain raw materials and on engineering industry capacity, and thus should make it somewhat easier for Western European countries to export metal manufactures to foreign markets.

Nevertheless, there are still several reasons for caution in interpreting the recent improvement in the world payments position. First, by mid-1953 the nondollar world was still receiving grants from the United States in excess of its actual dollar deficit; and this aid is being greatly reduced. In addition, the United States Government is purchasing a large amount of goods and services abroad, including stockpiling, military offshore purchases of commodities that are then donated by the United States as part of the military aid, construction outlays on airfields and other military installations for use of the NATO forces, and the maintenance of United States forces overseas; these expenditures are relatively temporary in character.

temporary in character.

Furthermore, the movement toward a more balanced position has been aided considerably by developments in the United States, where at certain periods during 1952 a continuing high level of demand contrasted with declining demand in Western Europe; the greater expansion of industrial activity in America than in Europe raised the demand for imports in the United States and at the same time tended to reduce the import demand in Europe. Also, to the extent that the drain on gold and dollar holdings or even an increase in reserves resulting partly from more stringent exchange and import restrictions, it cannot be regarded as a sign that a truly stable and satisfactory dollar balance has been established; it is only when proper monetary and fiscal policies relieve the pressure of aggregate demand that a self-sustaining external balance can be established. In addition, the improvement in the dollar positions of many nondollar countries has tended to lag behind the improvement in their over-all balances of payments; and the improvement in the gold and dollar holdings of some countries has to a certain extent been merely the counterpart of a deterioration elsewhere. Even though the over-all payments problem appears to be easing, certain countries still have considerable dollar deficits in their balance of payments; however, these appear mainly attributable to special circumstances.

Finally, the remaining payments difficulties also reflect, to a varying extent according to countries and areas, various maladjustments of a structural nature. For instance, the American economy appears to exert a dominating influence on the outer world because of its larger resources, its greater productivity, and the speed with which it exploits technical innovations; and some of the dollar problems of the outer world are undoubtedly attributable to these factors. There are also deep-seated maladjustments in the patterns of trade among the principal trading areas. Furthermore, countries like France, the Netherlands, and the United Kingdom have also been greatly affected by the loss of much of their overseas investments at the same time that they have been incurring large dollar indebtedness.

Yet, even though internal economic balance still must be consolidated and there still remains a need for structural adjustments in production and trade, many countries appear to be making greater strides toward stabilizing their economies, domestically and externally, than at any time since the war. More particularly, the sterling area, which accounts for more than one fourth of total world trade, seems to be on its way to a more nearly sustainable pattern in its international accounts.

Conclusion

Far from demonstrating the prevalence of an intractable "disequilibrium", the postwar dollar "shortage" for the most part has therefore been a sign of the rapid recovery of Western Europe and its overseas currency areas, and of the free gifts made by the United States and Canada to speed up postwar rehabilitation and reconstruction. A rapid economic expansion and an acceleration of investment throughout the free world during the earlier postwar years was one of the major purposes of United

States foreign policy. Now that the recipients of American aid had succeeded in employing their own resources fully and in restoring fiscal and monetary order, the dollar "shortage" is largely disappearing. Even though it is not possible to isolate the fundamental factors working toward a dollar equilibrium from the temporary and extraneous ones, these favorable circumstances must not be allowed to obscure the remarkable improvement in the basic international economic situation that has been achieved thus far.

Today, the main cause for scepticism is the fact that the closing of the dollar gap is taking place in an environment in which the ability of nondollar countries, especially most Western European nations, has not yet been tested by currency convertibility and a reduction in trade discrimination. Nevertheless, recent developments have given rise to new hope that many of these countries, even while continuing to meet heavy defense requirements, will succeed in the triple task of stabilizing their currencies, re-establishing efficient, flexible, and self-supporting economies that alone can insure balanced growth, and rebuilding their monetary reserves. These developments have also strengthened the conviction that, if the recent improvement in the international payments position is to be sustained, effective policies will have to be devised, in the United States as well as abroad, to promote a much more integrated pattern of world trade.

From: "The International Gold and Dollar Movement, 1945-1953" published by the National Bank of Belgium in its October, 1953 Bulletin d' Information et du Documentation. The English text is printed here with the permission of the National Bank of Belgium.

Section IV

Comparative production costs, United States and competing foreign countries.

SECTION IV

Summary

The American worker in the electrical equipment and supply industry receives considerably higher wages and wage supplements than does his counterpart in the nine foreign countries under study. This wage differential which existed already in the prewar period has increased continuously over the last fifteen years in favor of the foreign countries (except for Japan) so that today total hourly wage payments (including supplements) abroad, at the official commercial exchange rate, are smaller compared to U. S. wage payments than at any previous time. The single exception to this is Japan whose extremely large wage differential with the U. S. has slightly narrowed since 1938. Of special interest is also the change in the comparative wage position of West Germany which moved from the highest wage-cost country among the nine in 1938 to the fourth lowest in 1952.

In most of the European countries under study wage supplements in form of various compulsory employers' social security contributions have increased much more since the prewar period than have direct wage payments. The increase is largest in France and Italy where it jumped from approximately 9% and 6.5% respectively of cash wages in 1938 to 34% in 1952. It is smallest in Great Britain and Sweden where a large part of the various social security expenditures come out of general public funds.

Total labor cost as a percentage of production (in current value) is available in the electrical equipment and supply industry for both prewar and postwar years for only four countries and the U. S. For three of these (Holland, Germany, France) labor costs have declined much more since the prewar period than they have for the U. S. In Great Britain, although steadily declining from the postwar peak of 1948, they have not yet quite returned to the prewar figure. In all the countries a continuous decline of labor costs throughout the postwar period is noticeable. This decline is usually steeper for the 1948-52 period in the foreign countries than it is in the United States. This is explained partly by the fact that in 1948 output in the various foreign countries was still very low while employment was high, and partly by the fact that wages abroad in this industry have not kept up with inflationary price increases to the extent to which they have done so in the U. S.

Physical output per manhour has increased considerably more in the U. S. than in any of the foreign countries although all of the foreign countries have improved their real productivity in the electrical equipment and supply industry as compared to the prewar period and also within the postwar period. The improvement is least in Japan where the prewar productivity mark was only reached in 1951.

Case studies by a number of manufacturers with foreign and U. S. production cost experience for identical items show that in only one case, in France, were overall production costs considered to have been higher than in the U. S. Two cases dealing with operations in Great Britain and two

cases dealing with Germany report total production costs to be from 30% to 50% below those in this country. For three products manufactured in Great Britain and for two made in Germany total costs are reported to be approximately equal to those in the U. S. On the whole, U. S. manufacturers with foreign costs experience state that while labor costs are universally much lower abroad total production costs depend to a very large degree on the volume of production.

Of special interest is the report of a group of U. S. engineers who went to Europe after the outbreak of the Korean war to make an appraisal of labor rates and of "general effectiveness in the use of labor and material" for the electrical equipment industry in seven countries. Their figures show that labor rates varied from 17% to 39% of rates paid for similar work in the United States while "general effectiveness" varied from 45% to 110% of "effectiveness" in plants producing similar products in this country. Relating the labor rate percentages to those for "general effectiveness" gives a rough approximation of unit labor costs. These are in every case considerably below U. S. labor costs, ranging from 20% to 78% of the latter. While it must be considered that the foreign labor rates are only base rates exclusive of the considerable employers' social security and other indirect wage payments, if one added these payments to the reported wage rates it would still leave the foreign labor cost considerably below that for the U. S. in most cases.

A comparison of European and U.S. price quotations of heavy electrical equipment in several Latin American and Asian countries within the last 18 months shows that of 121 different quotations made by French, German, Swiss, Italian, Swedish, Belgian, Austrian, British, Japanese and Mexican producers in only 24 cases were foreign price quotations higher than the lowest U. S. bid, in two cases they were the same and in 95 cases they were below the lowest U. S. bid. The average foreign bid was 20% below the lowest U. S. bid.

Food Subsidies in the United Kingdom

Foreign government attempts in the postwar period to subsidize low wages by artificially maintaining low costs of food were in existence in the Netherlands, Sweden, Switzerland, the United Kingdom and to a limited extent in France and Belgium. These food subsidies were largest of all countries in the U. K. where in 1948-49 they amounted to 13% of the total expenditures of the central government and even in 1952-53, after they had been greatly reduced, still amounted to 6% of the total. To the industrial worker with three dependents, food subsidies amounted in 1948 to 13% of average wages but had dropped in 1953 to only 4%. Since 1952, food subsidies, which were designed not so much to maintain low wages as to prevent undue rises in the retail price index, have been greatly reduced, accompanied by increases in family allowances and income tax reductions for low-income groups, so that today they are not a very significant factor in maintaining low wages in Great Britain.

LABOR COSTS: AN INDIRECT APPROACH

Internationally comparable labor cost figures in the electrical equipment industry are virtually nonexistent for the countries under study in this report. The United Nations Commission for Europe states in the preface to a survey of the European engineering industry published in 1951: "Although it is largely recognized that much of the weakness of the European engineering industry lies in its relatively high costs of production, data available on costs and productivity have proved to be inadequate for a useful discussion at this stage."

What is attempted in this section of the report is an indirect approximation of labor cost figures through an analysis of certain factors which have a direct bearing on cost of production. The most important of these are production, employment, hours worked, wage rates and wage supplements. Available information on these factors and the conclusions based on them are summarized in the following paragraphs.

It should be kept in mind that no information at all exists concerning two factors which have an important direct influence on labor costs. These are quality or style differences of similar products and mechanical equipment per production worker which is of prime importance in any comparative analysis of output per worker.

Production

In comparing electrical equipment production for the various countries the following limiting facts have to be kept in mind: Output is not fully comparable from country to country inasmuch as the definition "electrical equipment" differs from country to country. In some cases repairs and outside installations are included; in others they are not. Sometimes, but only some times, turbines and water wheels are included, while several of the countries give only total figures for this industrial category without indicating its composition.

In all of the countries there is a wide difference between the index for physical output and the index for output in current monetary value. This is due to the inflation which has characterized the post-war period. Inflation is strongest in Japan where wholesale prices for electrical equipment increased 320 times between 1934-36 and 1952. It appears to be least in Germany where they just doubled during the same period.

Employment and Wage Payments

In nearly all countries for which both pre-war and post-war figures on employment are available total employment increased sharply from prewar to 1950. This trend corresponds roughly to the increase in physical output that

took place over the same period of time, although increased employment alone does not account fully for the postwar increase in production. One other reason is the increased number of hours per worker. In general, this rise has continued to grow during the postwar years. To understand this trend it is important to realize that the legal work-week before overtime payments become due lies between 45 and 48 hours in most European countries and overtime payments are generally not more than 25% above regular wages. The two exceptions to this increasing trend of hours per worker are Great Britain where the work-week has remained stabilized over the last 15 years and Germany where the work-week was so high (49.5 hours) in the last prewar years that the country has not yet returned to it.

Wages in the electrical equipment industry have approximately followed the general wage trend in each country. Thus monetary wages have increased sharply, both, as compared to prewar and also during much of the postwar period, in line with the general monetary inflation of the period. The trend for real wages has in all cases lagged far behind monetary wages and has not even always moved in the same direction. Real wages in Japan had not increased at all over the prewar period (1934-36); by 1952, monetary wages had risen by over 3000%. In Germany, on the other hand, where monetary wages increased by only 100%, real wages had increased by about 25% during the period 1938-1952. The same is true of Great Britain where with a relatively mild monetary inflation real wages increased more than 30% between 1938 and 1951. In France where monetary wages increased 15 times, real wages have gone up only very slightly over the prewar period.

Within each country the index of real wages may be used for study of historical trends. Such indexes, of course, reveal nothing about comparative levels of real earning from country to country. However, it may be stated that, with the possible exception of Great Britain and Sweden real earnings since the prewar period (1935-38) rose considerably more in the United States than in any of the countries under study. Since real earnings were undoubtedly already higher here in the prewar period, this means that the spread in real earnings between the United States and most European countries and Japan has increased over the past fifteen years.

The most significant factor about monetary wages in the countries under study (except Japan) is that they have increased considerably less for the electrical equipment industry over the past 15 years than they have in the United States. In other words, the wage differential between the United States and European countries has widened during the postwar period. Some significant changes have also taken place among foreign countries under study between the prewar and the postwar period. Thus, Germany has moved from the position of the highest-wage country among the nine in 1938 to the fourth lowest in 1952. This is of particular significance because of Germany's high state of industrialization among these countries. Another change that has taken place is the wage relationship between Holland and Belgium which has become just reverse of what it was before the war when Dutch wages were almost 20% higher than Belgian. The only country which shows an improvement in wages compared to the U.S. is Japan.

The following table, derived from table No. 1, summarizes the change in the foreign wage payments as compared to the U.S. for one prewar and the latest postwar year:

Foreign Wage Payments
in the Electrical Equipment Industry as
a Percentage of U.S. Labor Cost in the Industry

	1952	1938
United Kingdom	28.00	37.00
France	30.96	43.30
Germany (West)	22.05	46.57
Belgium	33.04	34.50
Switzerland	23.84	33.89
Sweden	33.00	44.08
Holland	20.74	41.04
Italy	19.60	22.69
Japan	9.91	7.30

In examining the trend of wages for the postwar period as shown in Table 1, it will be noticed that, except for Japan, all countries show a drop for 1950 and some also for 1949, of wages expressed in U.S. currency. This drop is due entirely to the international currency devaluation of September 1949 and does not reflect any real domestic drop in wages. In fact, domestic monetary wages show an almost continuous rise for all countries concerned during most of the postwar period.

Another important factor is the increase in employers' social security contributions of all sorts. This factor has increased by a larger percentage in most of the countries than have actual cash wages. The result is that European workers and trade unions have become to an ever increasing degree dependent on these special payments and are often more concerned with maintaining and increasing them rather than demanding higher earnings from employers. The most important of these special payments is the family allowance paid to workers according to their number of dependents. In France and Italy these family allowance payments amount for an unskilled worker with three children to almost as much as does his weekly take-home pay. Family allowance in France has increased from 3% in 1938 to 15.5% in 1952. Total social security taxes in France have jumped from 13% to 41%. In Italy they have increased during the same period from 6% to 30% plus a 4% general payroll tax in existence since 1950. No family allowances are paid in Western Germany.

Except for Great Britain and Sweden family allowances as well as all other regular social security payments are met only through employer and employee contributions (the latter being always only a fraction of the former) and are not subsidized by the Government. In Great Britain and Sweden such payments are largely made out of general Government funds and may therefore be considered a wage subsidy.

Labor Costs and Productivity

To determine the real labor cost position of the countries under study it is necessary to determine not only wages but also, as far as possible, output per manhour. The inherent difficulties in this are very great. For one thing, as we have already mentioned, total production figures for electrical equipment are not necessarily comparable from country to country as they are either not composed of exactly the same items or their composition could not be determined at all. To a smaller extent the same applies to total figures for production workers the definition of which has only limited international comparability. Another complicating factor is that within the electrical equipment industry there are high, medium and low labor cost-per-unit subgroups depending on such factors as whether a specific item is custom-made or mass-produced. If in one country the low labor cost-per-unit subgroup produces a larger share of the total than the other subgroups then that country's labor cost figure for the entire electrical equipment industry tends to be lower than that of another country where the distribution of these sub-groups is different. For these reasons comparability of labor costs between countries is only of very limited validity. Comparability from year to year within each country, although it contains some of the limiting factors discussed above, does exist. The resulting trend of labor cost is internationally comparable.

Table No. 5 is the ratio of total wage payments per worker to total output per worker in current value. Prewar figures are available for only four of the countries. For Holland, Germany and France this ratio has improved considerably more between the last prewar year and the first available postwar year than it has in the U.S. For Great Britain the ratio was higher during the beginning of the postwar period over 1935 but steadily moved downward in later years. The same downward movement since the end of World War II can be noticed for all the countries. In the postwar period this movement has increased the labor cost advantage of the foreign countries versus the U.S. It should, however, be made clear that this does not mean that actual productivity per worker is higher in foreign countries than in the U.S. Physical output per manhour in the U.S. has been and still is higher than abroad. What these figures do imply is that the value of output per manhour in the various foreign countries has increased more, relative to money wages and wage supplements, than it did in the U.S.

In comparing prewar with postwar figures in Table 5 it is also important to keep in mind that the one prewar year for which information was available is not necessarily a typical year for the period. In France, for instance, it is claimed that 1938 was not a good year to measure production costs because of a combination of low output (generally considered to have been considerably lower than in 1929 or the early thirties), a large number of strikes, and the beginning of conversion from peace-time to war-time production which affected the durable goods industries more than other sectors of the economy.

It should be noted that the reason why labor cost is particularly high for Japan is that it is based not on the output per production worker, as are all the other percentages, but on output per employee (salary and wage earners) since separate figures for production workers were not available. An indication of labor cost figures based on production workers only

in the electrical industry is given by the Japanese census for the last half of 1950 and the years 1951 and 1952. The figures are 15.12%, 13.73%, and 15.15% for the respective years, as reported by a number of major corporations.

Index of Productivity

This index on Table 6 again is only of very limited international comparability for the reasons described in the previous section. An additional reason is that for several of the countries this index was derived by deflating manhour output in current prices by an appropriate wholesale price index or other deflator. Since these indexes are not composed of the same items in each country this operation further reduces comparability. It also affects to a certain extent year-to-year comparability within each country although it may be assumed that the trends shown approximate roughly the true changes in physical output per manhour.

A comparison of the index trends shows immediately that the United States leads all other countries by far. Everyone of the countries shows a steady increase during the postwar period and although prewar bases are available for only three of the countries there is no doubt that in all but one of the nine countries physical output per manhour has increased significantly since the prewar period. The one exception is Japan where it appears that the prewar level of output per manhour was not regained until 1951 (although no exact total figures on output and employment in prewar Japan are available). The large increase in France between 1938 and 1950 may be explained partly by the previously mentioned fact that 1938 was a year of particularly low productivity. However, there is no doubt that the increase also reflects a true physical increase.

The large jump in output per manhour noticeable for all countries between 1950 and 1951 is undoubtedly largely due to the Korean war and its economic implications in form of defense orders, U.S. dollar procurement in form of "off-shore purchases", etc. all of which permitted more efficient use of existing capacity and replacement of obsolete equipment. This is particularly true of Japan where the electrical equipment industry received a strong boost by the Korean war and consequently was able to increase substantially its productivity.

Case Studies on Comparative Costs of Production

Data are not available from regularly published sources that permit a comparison of the cost of production in the United States and abroad. Basic to any such comparison is the need for locating identical products produced in both countries. Such a factor has proved to be a fatal stumbling block in the past.

The Conference Board attempted to overcome this obstacle by obtaining the data directly from companies with overseas plants or licensees. The judgment of the companies actually manufacturing or licensing was accepted as proof of the comparability of the items made.

By obtaining the data directly from the companies engaged in production it was also possible to limit the errors arising from another source, namely, the different accounting methods that might be used in each country. But even with identical accounting methods it is possible for the figures to be misleading. Fringe benefits, for example, are ordinarily included in "manufacturing expense" rather than in labor costs in the United States and abroad. But since fringe benefits are generally considerably more important abroad than they are in the United States a simple comparison of "labor costs" from the accounting records would still be misleading.

Information was not available as to the exchange rate or rates used to convert foreign costs so as to make a comparison possible. Consequently it is not possible to tell what distortion, if any, is inherent in the figures by reason of being converted from the foreign currency.

Furthermore no data are available on the rate of capacity operations to which the following cost data relate. In some industries, particularly those with heavy overhead charges, the rate of capacity operations will have an important bearing on the calculation of unit costs. The use of standard costs (evidently not incorporated in the data below) would have avoided this shortcoming.

The cost data are presented as received, with practically no change from the original. Where material has been left out (to avoid identification) that fact has been indicated. Material inserted is indicated by being enclosed in parentheses. Inserted material usually has displaced material in the original text, again to avoid disclosure of the company supplying the data.

Case 1. A machinery manufacturer that licenses overseas companies.

ITALY.

In 1952 we licensed an Italian manufacturer to make our ... packing machine. He delivers these packers to our European subsidiary for sale ex-Italy at a price which is 27% more than our cost of manufacture. Assuming that the Italian manufacturer's price to our subsidiary includes a 20% mark-up over his actual manufacturing cost, we can assume that his Bologna plant's cost is roughly equivalent to our cost.

GREAT BRITAIN.

We have contracted with a British manufacturer to make our ... machine. He delivers these makers to our English subsidiary at a price 10% less than our ... manufacturing cost. Assuming that the British manufacturer's price to our London subsidiary includes a 20% mark-up over his actual manufacturing cost, we might assume that his cost is 30% less than our ... cost.

GERMANY.

We are considering licensing a German manufacturer ... He has quoted our European subsidiary a delivery price which is 29% above our manufacturing cost (in Great Britain.) Assuming that the German manufacturer's price includes a 30% mark-up, we might assume that his cost (is) approximately the same as our plant's cost (in Great Britain.)

We are also considering licensing this German manufacturer to make (another product of ours.) He has quoted a delivery price equivalent to our ... plant's manufacturing cost, hence his actual manufacturing cost might be 25-30% below ours.

Case 2. A manufacturer in the "Concrete, Gypsum and Plaster Group" with its own subsidiary in Great Britain.

	United States	England
Material	63.5%	66.9%
Labor	9.5%	5.0%
Expense	27.0%	27.6%
Total	100.0%	99.5%
Labor Rates (Currency Basis)	100.0%	31.3%

These figures are all expressed as a percentage of the total American cost. The labor costs are estimated on base wage rates.

Case 3. A manufacturer of chemical specialities plans to invest in both England and West Germany.

> Partly as a result of and immediately after the war, we built up a substantial business in England and on the Continent in our specialty chemicals. Beginning about four years ago, due to various and sundry restrictions, this business has slowly been dying off. In fact, in France, specific restrictions were placed against the import of our materials.
>
> As a result of the foregoing, we are now engaged in final negotiations for plants to produce these materials in both England and West Germany. To date, our studies indicate that these materials cannot be produced any cheaper in those countries than in this country, even though the cost of the plant in the corresponding place is only about two-thirds what it would be in this country.
>
> Our reason for building these plants is that we are convinced that the currency manipulations and the import restrictions against the dollar will permanently make it impossible for us to export from this country by conventional means.

Case 4. A manufacturer of a metal consumer product with its own plants abroad

Comparison of Costs of Similar Products
Using United States Manufacturing Costs as
a Base at 100%

United States	100%
England	57
France	108
Mexico	71
Argentina	78
Brazil	46
Canada	97

Case 5. A manufacturer of office and store machines and devices with its own manufacturing facilities abroad.

> We have developed manufacturing facilities for a limited line of our products in Great Britain and in Germany since the end of the war, for the purpose of getting our products into many countries, which would otherwise be unable to obtain them because of the so called dollar shortage. The costs of products manufactured in these countries are approximately the same as the costs of identical products manufactured here ...
>
> These costs are approximately the same in spite of the fact that the foreign factories use (American) designed tooling, (American) production methods, (American) "know how," and have wage costs about one third to one fourth of the United

States wage costs. This paradox seems to be usual in many industries of a highly specialized manufacturing nature. The reason can be partly found in volume. The general facilities at the overseas plants are so small by comparison with those (here) that a number of parts have to be purchased from outside sources. In addition, specialized operations are so many times more expensive, that the advantage of lower wage rates is more than offset.

It is clear that where articles to be produced depend largely on skill and "know how," even though high quality machine tools are involved, then the lower wage rates of some countries place them in an advantageous position. I am thinking of production of high grade tools in Germany. There is technical skill and "know how" in Germany in the precision tool-making art for our type of industry. As wage rates in Germany are about one fourth of what they are in the United States, it follows that precision tools can be acquired in Germany at about one third to one fourth of the comparable cost of producing them in the United States.

Case 6. Petroleum company with diversified interests.

It is difficult to make a direct comparison of operating a petroleum refinery in the U.S. and abroad because of difference in sizes and types of refinery. Generally speaking, it appears the cost of operating a refinery in the U.S. is somewhat greater than operating a typical European refinery of more or less the same type and capacity. However, again it must be remembered that the investment required to construct a refinery abroad might be materially more than in the U.S.

TABLE I
TOTAL HOURLY WAGES AND WAGE SUPPLEMENTS
ELECTRICAL MACHINERY AND EQUIPMENT INDUSTRY

	1952	1951	1950	1949	1948	1938
United Kingdom						
Wages (pence)	46.10	45.16	41.96	40.6	39.37	13.38
Conversion rate	.011667	.011667	.011667	.0155	.01679	.01929
U.S. Dollars	0.538	0.527	0.490	0.629	0.661	0.258
France						
Wages (francs)	207.08	172.28	133.24	120.68	105.90	12.77
Conversion rate	.00286	.00286	.00286	.00343	.00375	.025
U.S. Dollars	0.592	0.493	0.3811	0.414	0.397	0.319
Belgium						
Wages (francs)	31.59	30.07	27.96	26.34	25.60	6.87
Conversion rate	0.020	0.020	0.020	0.0220	0.0228	0.37
U.S. Dollars	0.632	0.601	0.56	0.58	0.584	0.254
Switzerland						
Wages (francs)	1.99	1.90	1.822	1.93	1.89	1.11
Conversion rate	0.2289	0.2289	0.2332	0.2391	0.2413	0.2253
U.S. Dollars	0.456	0.435	0.425	0.438	0.456	0.25
Netherlands						
Wages (guilders)	1.508	1.468	1.372	1.272	1.26	0.55
Conversion rate	0.263	0.263	0.263	0.34	0.377	0.55
U.S. Dollars	0.397	0.386	0.361	0.432	0.475	0.303
Italy						
Wages (lire)	234.30	225.30	222.34	204.55	197.11	3.344
Conversion rate	0.0016	0.0016	0.0016	0.0017	0.00174	0.05
U.S. Dollars	0.375	0.361	0.356	0.348	0.343	0.1672
Japan						
Wages (yen)	68.20	66.40	52.27	45.30	26.78	0.192
Conversion rate	0.00278	0.00278	0.00278	0.00278	...	0.28
U.S. Dollars	0.1896	0.185	0.145	0.126	...	0.054
Germany						
Wages (D.M.)	1.77	1.66	1.42	...	...	0.858
Conversion rate	0.238	0.238	0.238	...	...	0.40
U.S. Dollars	0.421	0.396	0.338	...	...	0.343
Sweden						
Wages (Cr.)	...	3.27	2.77	2.64	2.525	1.37
Conversion rate	...	0.1932	0.1932	0.2506	0.2782	0.2389
U.S. Dollars	...	0.632	0.535	0.661	0.703	0.327
United States						
Wages	1.913	1.770	1.598	1.553	1.495	0.737

Source: See end of section

Hourly wage payments (Table I) consist in each country of direct cash wage payments and of employers' total wage supplement payments (see Table II). Direct wages are for hourly earnings in the electrical equipment and machinery industry for all workers of both sexes. They are in general somewhat higher than the average hourly earnings for all industrial workers in the respective country due to the fact that the electrical equipment industry belongs to the category of higher wage industries and usually its plants are located in those areas where high industrial wages are prevalent. On the other hand, its wages are not quite as high as those in other metal-fabricating industries because of the relatively high prevalence of female industrial workers who in Europe as well as in Japan receive a lower wage than men even if they are engaged in the same jobs.

To convert the various hourly wage figures from their respective national currencies into United States dollars the official exchange rates prevailing in the respective years were used. For the postwar years these rates bear only an extremely limited relationship to the real domestic purchasing power of the various national currencies and even for 1938 the official exchange rates do not reflect true purchasing power parity although they do come much closer to it than in the postwar period. Therefore, the various earning figures in this table, as expressed in U.S. currency, do not permit any international comparison of workers' real incomes. They do not even show the correct domestic trend of workers' earnings since in September 1949 a devaluation of all the foreign currencies took place vis-a-vis the dollar resulting in a decline in earnings expressed in dollars for 1949 and 1950 while wages in national currencies rose during the same period.

On the other hand, these figures do permit international comparison of direct and indirect wage payments since they are converted into dollars at the same exchange rate at which the goods produced by these wage earners would enter international trade (into hard-currency countries). For an indication of the trend in workers' real earnings see index of real wages (Table III).

TABLE II
AVERAGE WAGE SUPPLEMENTS AS PERCENTAGE OF CASH WAGES
ELECTRICAL EQUIPMENT AND SUPPLY INDUSTRY

	1952	1951	1950	1949	1948	1938
United Kingdom	3.6	3.6	3.6	3.6	3.6	3.0
France	34.4	34.4	34.4	34.4	34.4	9.2
Belgium	17.0	17.0	17.0	17.0	17.0	N.A.
Switzerland	11.8	11.8	11.8	11.8	11.8	5.5
Netherlands	20.0	20.0	20.0	20.0	20.0	N.A.
Italy	34.0	34.0	34.0	34.0	34.0	6.5
Germany	12.8	12.8	12.8	12.8	12.8	8.7
Sweden	1.0	1.0	1.0	1.0	1.0	N.A.
United States	7.8	7.9	8.0	7.8	7.0	5.0

Source: See end of section

Employers' wage supplement contributions (Table II) include all social security, pension, accident and family allowance payments made by the employer as well as any general taxes on payroll. The percentages of wage payments which they represent are somewhat variable depending on the worker's income. Generally, they vary progressively with workers' pay up to the taxable maximum. For these reasons the percentages in this table which are based on average earnings in the electrical equipment industry may differ somewhat from those in other industries or from the country's national average.

Except for the United States, only compulsory contributions were taken into account. Employers' contributions for this country include compulsory social security and unemployment insurance payments as well as all other wage supplements customary in the electrical equipment industry. The reason for including these voluntary supplements for the United States only is that they have become so strongly established in the industry as to carry almost the force of compulsion. In Europe most of these supplements are part of the compulsory social security system. Exact wage supplement figures for Japan are not available but they amount to only a very small percentage of cash wages.

TABLE III

INDUSTRIAL PRODUCTION AND THE PRODUCTION OF ELECTRICAL MACHINERY AND EQUIPMENT FOR SELECTED COUNTRIES

INDEX NUMBERS, 1938 = 100

	1952	1951	1950	1949	1948	1947	1946
United Kingdom							
Industrial production	133	136	133	123	116	103	97
France							
Industrial production	146	139	123	122	111	95	80
Electrical machinery and equipment production	231	225	199	...	...	...	...
Italy							
Industrial production	146	143	126	109	99	...	...
Electrical machinery and equipment production	125	117	116	...	103	...	...
Belgium							
Industrial production	139	144	124	122	122	112	89
Electrical machinery and equipment production (1)	121	127	102	101	105	100	...
Netherlands							
Industrial production	146	144	138	126	112	93	73
Japan							
Industrial production	101	95	72	61	48	37	29
Electrical machinery and equipment production	...	109	85	91	83	56	36
Germany							
Industrial production (2)	144	136	114	90	63	...	...
Electrical machinery and equipment production (2)	288	222	198	150	...	...	...
Sweden							
Industrial production	164	167	161	155	149	137	135
United States							
Industrial production	248	250	226	200	217	210	191
Electrical machinery and equipment production	492	425	409	327	364	366	283

(1) 1947 = 100 (2) 1936 = 100

Sources: See end of section

All indices of general industrial production (Table III) are derived from the I.L.O. Yearbook for Labour Statistics and approximately comparable. The indices for electrical equipment production have been taken partly from trade association publications and partly computed by deflating production value figures by an appropriate index. Their comparability is therefore only limited.

The index for Germany, the source of which is the German Government, is definitely overstated in that a large part of the production increase is due to postwar transfer of production facilities from Berlin and Eastern Germany into Western Germany and thus represents a shift in production rather than an increase thereof. One German expert estimates that if allowance for this transfer is made it would cut the index figures in half.

The electrical equipment production index for the United States is probably also somewhat overstated since it was constructed by deflating current-value figures by the Commerce Department's "Implicit Price Deflator for Producers' Durable Equipment". Had the deflator for Consumers' durable equipment been used instead the production index would have been somewhat lower. The percentage of producers' and consumers' durable equipment in this industry is not available.

TABLE IV

HOURLY WAGES IN MANUFACTURING, MONEY AND REAL, FOR SELECTED COUNTRIES

INDEX NUMBERS, 1948 = 100

	1952	1951	1950	1949	1948	1947	1946	1938
United Kingdom								
Real	101	99	101	100	100	101	97	63
Money	127	118	107	103	100	93	84	42
France								
Real	126	119	105	100	100	103	115	...
Money	183	158	123	112	100	65	46	...
Italy								
Real	104	106	107	103	100	81	...	...
Money	120	116	107	105	100	76	...	...
Belgium								
Real	119	116	114	109	100	105	105	106
Money	127	122	110	105	100	91	87	28
Switzerland								
Real	102	101	104	102	100	98	95	90
Money	107	103	101	101	100	96	89	55
Netherlands								
Real	100	99	92	95	100	98	93	...
Money	121	119	108	100	100	94	88	...
Japan (1)								
Real	207	198	179	137	100	62	...	...
Money	288	266	207	171	100	36	...	...
Germany								
Real	144	129	123	110	100	...	...	117
Money	148	138	121	114	100	90	86	76
Sweden								
Real	115	112	105	102	100	96	86	...
Money	150	133	108	104	100	92	80	...
United States								
Real	111	109	109	105	100	99	99	79
Money	124	118	109	104	100	92	80	46

(1) Monthly wages

Sources: See end of section

The real and monetary wage indices (Table IV) are taken from the I.L.O. Yearbook for Labour Statistics and, except for Belgium, represent general wage trends in manufacturing industries. The Belgian indices are for the country's overall wages.

TABLE V
TOTAL WAGE PAYMENTS AS A PERCENTAGE OF PRODUCTION VALUE ELECTRICAL MACHINERY AND EQUIPMENT INDUSTRY

	U.S.	United Kingdom	Belgium	Holland	Germany	France	Japan (for salaried employees and production workers)
1935	...	23.5	...	...	...	...	...
1936	...	...	...	...	21.19	...	...
1938	...	...	...	...	...	28.75	...
1939	22.13	...	...	28.00	...	...	...
1947	...	...	...	...	...	...	...
1948	22.05	27.6	27.93	21.69	...	...	27.50
1949	20.43	26.7	23.56	21.94	...	15.62	27.73
1950	19.66	26.1	23.35	21.27	19.99	...	26.61
1951	21.90	25.7	23.22	...	18.19	14.58	...
1952	20.03	23.9	22.18	...	17.27	14.44	...

Note: Figures include social security and other supplements to wages

Source: See end of section

These percentage figures (Table V) are based upon output and total wages per production worker (except for Japan). They include wages as well as all wage supplements (see Table II). Since only total employment figures for the electrical equipment industry were available for Japan labor costs for this country are computed on the basis of pay and output per full-time employee. For an estimate of labor costs based on production workers in Japan see the accompanying text.

TABLE VI
PRODUCTIVITY INDEX OF ELECTRICAL MACHINERY AND EQUIPMENT INDUSTRY

	United States	Germany	France	Belgium	Holland	Japan
	1939=100	1936=100	1938=100	1947=100	1939=100	1948=100
1935	...	...	...	...	...	...
1936	...	100	...	...	...	...
1937	...	...	...	...	...	...
1938	...	...	100	...	...	...
1939	100	...	...	...	100	...
1946	...	...	...	...	60.4	...
1947	...	...	...	100	89.6	...
1948	129	...	...	106	112.7	100
1949	140	83.9	...	115.2	111.6	124
1950	146	94.9	118	122.2	123.2	132
1951	132	112.6	124	132.1	...	187
1952	154	117.7	126	130.2	...	...

Source: See end of section

The productivity indices (Table VI) for Germany and France are taken directly from Trade Association annual reports. For the United States, the United Kingdom, Belgium and Holland they have been computed on the basis of production and total man-hour indices. For Japan the index which has been computed by the Mitsubishi Economic Research Institute does not represent just the electrical equipment industry but the whole machinery industry of which electrical equipment and machinery represents about 30 percent. For international comparability of various productivity indices see the accompanying text.

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SOME SPECIFIC INSTANCES OF COMPARATIVE COSTS AND PRICES

For the following Exhibits The Conference Board is indebted to several United States companies.

EXHIBIT A gives information compiled from actual visits to important manufacturing plants in the countries indicated, and the LABOR RATE (Column "X") can be considered as an accurate indication of base rates. The figures under GENERAL EFFECTIVENESS IN USE OF LABOR AND MATERIAL (Column "Y"), are the unanimous opinion of several well qualified American engineers and production men, based on actual factory visits. These two columns, "X" and "Y", taken together give a good idea of the labor cost in the different product lines and for the different countries.

EXHIBIT B is a comparison of European and U.S.A. prices on actual jobs negotiated within the last 18 months in one of the South American countries. In all the cases the tenders were opened in the presence of company representatives, and therefore, the figures can be considered extremely accurate and represent actual prices quoted. As you will note, they are made up on the basis of the price of the U.S. company as 100. In no case was the price of the U.S. company higher than the domestic price in the U.S.A. plus the usual export adders, such as export boxing and freight.

EXHIBIT C is simply a rearrangement of the data in EXHIBIT B.

EXHIBIT D contains additional data comparing the bids of United States, Canadian and European companies for various jobs throughout the world.

EXHIBIT A

COUNTRY	MAJOR TYPE OF PRODUCT	"X" LABOR RATE	"Y" GENERAL EFFECTIVENESS IN USE OF LABOR & MAT'L	"X" / "Y"
England	Apparatus	35%	55%	64%
	Lamps	35%	70%	50%
	Radio Tubes	35%	50%	70%
France	Apparatus	30%	45%	67%
	Ins. & Chemicals	25%	70%	36%
	Lamps	30%	40%	75%
Switzerland	Apparatus	30%	70%	43%
	Lamps	30%	50%	60%
Italy	Apparatus	17%	30%	57%
	Lamps	17%	30%	57%
Germany	Apparatus	22%	62%	35%
	Electronics	22%	110%	20%
	Lamps	20%	60%	33%
Holland	Lamps) Electronics & X-Ray)	38%	75%	51%
Sweden	Apparatus	37%	60%	62%
	Lamps	39%	50%	78%

COLUMN "X": Relative rate of typical employee compared to rate paid in U. S. A. for same class of work.

COLUMN "Y": Effectiveness compared to top notch manufacturer in U. S. A.

EXHIBIT B

COMPARISON OF EUROPEAN AND U.S.A. PRICES

2 - 10,000 KW Steam Turbogenerator Plant

Turbogenerator		Transformers and Switchgear	
U.S. Company	- 100	U.S. Company	- 100
Alsthom (France)	- 61	Alsthom (France)	- 102.5
A.E.G. (Germany)	- 44	A.E.G. (Germany)	- 85

27,600 KVA Hydraulic Turbine Generator Plant

Hydraulic Turbine Generator		Transformers	
U.S. Company	- 100	U.S. Company	- 100
Alsthom (France)	- 84	Alsthom (France)	- -
A.E.G. (Germany)	- 67	A.E.G. (Germany)	- 64
Brown Boveri (Switzerland)	- 82.5	Brown Boveri (Switzerland)	- 105

2 - 7,500 KW Steam Turbogenerator

U.S. Company	- 100
Alsthom (France)	- 81

4 - 21,500 KVA Hydraulic Turbine Generator Plant

Hydraulic Turbine Generators		Transformers	Switchgear
U.S. Company	100	100	100
Alsthom (France)	62	-	-
Siemens (Germany)	69.8	66.5	60

2 - 10,000 KW Steam Turbogenerator Plant

Turbogenerator		Transformers and Switchgear	
U.S. Company	100	U.S. Company	100
Alsthom (France)	50.5	Alsthom (France)	56.5

2 - 30,000 KVA Hydraulic Turbine Generator Plant

Hydraulic Turbine Generator		Transformers and Switchgear	
U.S. Company	100	U.S. Company	100
Brown Boveri (Switzerland)	74	Brown Boveri (Switzerland)	75
Alsthom (France)	122	Alsthom (France)	79

EXHIBIT C

EUROPEAN QUOTATIONS AS A

PERCENT OF U. S. QUOTATIONS

	France (Alsthom)	Germany (A.E.G.)	Germany (Siemens)	Switzerland (Brown Boveri)
2 - 10,000 KW Steam Turbogenerator Plant				
Turbogenerator	61	44	...	...
Transformers and Switchgear	102.5	85	...	...
27,600 KVA Hydraulic Turbine Generator Plant				
Hydraulic Turbine Generator	84	67	...	82.5
Transformers	...	64	...	105
2 - 7,500 KW Steam Turbogenerator	81	...	...	...
4 - 21,500 KVA Hydraulic Turbine Generator Plant				
Hydraulic Turbine Generators	62	...	69.8	...
Transformers	...	...	66.5	...
Switchgear	...	...	60	...
2 - 10,000 KW Steam Turbogenerator Plant				
Turbogenerator	50.5	...	...	...
Transformers and Switchgear	56.5	...	...	...
2 - 30,000 KVA Hydraulic Turbine Generator Plant				
Hydraulic Turbine Generator	122	...	...	74
Transformers and Switchgear	79	...	...	75

COMPARISON OF FOREIGN AND U.S. PRICES

2 - 2500 KVA Hydraulic Generators
2 - 2500 KVA Transformers
2 - 150 KVA Transformers

Mayuraksai, W. Bengal, India - 1952

Manufacturer	2500 KVA Generators		2500 KVA Transformers		150 KVA Transformers
U.S. Company	100		100		100
Ansaldo (Italian)	67		76		-
Harland (British)	74	Bonar Long	65		58
A. E. G. (German)	32		-		-
Elin (Austrian)	52		65		63
Mitsubishi (Japenese)	202		-		-
Finns Hyttans by ASEA (Swedish)	64	ASEA	73	E.C. & E. Co., Ltd.	56
Siemens (German)	90		70		51
G.E.C.	96		-		-
Oerlikon (Swiss)	64		111		62
English Electric (British)	90		81		66
Domite (German)	-		46		51
Ferranti (English)	-		67		57
Garkelah (German)	-		57		55
Jast Eng. Co.	-		74		64
Lepper (German)	-		67		72
B.E.T.	-		73		65
So. Wales Swgr. Co.	-		72		62
Brush (British)	-		78		64
Hackbridge	-		81		68
Korch Serrel (German)	-		63		-
Mirlin (French)	-		-		62
ACEC (Belgian)	-		86		-

3 - 9000 KVA Hydraulic Generators

Tungabhada, Madras, India - 1952

U.S. Company	100	Jenomont (French)	109
Brown Boveri(Swiss)	69	Fuji (Japanese)	174
Oerlikon (Swiss)	75	Alsado (Italian)	109
English Electric (British)	71	Elin (Austrian)	123
G. E. (Canadian)	84	Itachi (Japanese)	146
ACEC (Belgian)	94	ASEA (Swedish)	101
Siemens (German)	83		
Metrovick	98		

2 - 10,000 KW Unit Power Plants

Candiota Power Plant, State of Rio Grande, Brazil - 1952

U.S. Company	100
Siemens (German)	79
Japan Heavy Industries	74
Francobel (French)	127
English Electric & J. Thompson	94
7 other unlisted bidders	-

2 - 25,000 KVA Generators & Transformers

Capastra, Brazil - 1952

	Generators	Transformers
U S. Company	100	100
English Electric (British)	111	94
Oerlikon (Swiss)	84	78
ACEC (Belgian)	127	100
Elin (Austrian)	142	125
Brown Boveri (Swiss)	80	78
Siemens (German)	114	101
Alsthom-CGE (French)	103	94

1 - 30,000 KW Turbo Generator

Tacoa Station, Venezuela - 1953

U.S. Company	100
"Schneider" (French)	70
Alsthom (French)	43
Brown Boveri (Swiss)	47
Siemens (German)	53
Oerlikon (Swiss)	47

3 - 9333 KVA Transformers

San Bartolo, Mexico

U.S. Compnay	100
I.E.M. (Mexico)	124
Brown Boveri (Swiss)	96
Oerlikon (Swiss)	77
Jenomont (French)	76

50,000 KVA Generator

Ixtapantango, Third Unit, Mexico - 1950

U.S. Company	100
Siemens (German))	107
AEG (German)	100
Oerlikon (Swiss)	76
Elin (Austrian)	79
Brown Boveri (Swiss)	62

3 - 42,800 KW Generators

Miguel Aleman Station - Sept. 1953
Hydro Development - Mexico

U.S. Company	100
Alsthom (French)	70
Brown Boveri (Swiss)	69
Brown Boveri (Italian)	70
Brown Boveri (German)	67
Oerlikon (Swiss))	66
Siemens (German)	69
(No British Bids Tabulated)	-

2 - 30,000 KVA Hydraulic Generators

Cipreses, Chile - 1949

U.S Company	100
Brown Boveri (Swiss)	102
Secheron	130
Oerlikon (Swiss)	111

10,000 KVA Hydraulic Generators

Laxarviek,jun, Iceland - 1950

U.S. Company	100
Brown Boveri (Swiss)	99

12,500 KW Generator & Spare Parts: Switchgear

Wu-Lai, Taiwan - 1952

Generator		Switchgear	
U.S. Company	100	U.S. Company	100
Shibaura (Japanese)	98	Japanese (Mostly Mitsubishi)	70

FOOD SUBSIDIES IN THE UNITED KINGDOM

The purpose of this section is to examine the extent to which foreign governments subsidize low wages through maintaining artificially low costs of food for their workers. The time available has not allowed a detailed study of every country. Attention at this time is, therefore,' concentrated upon food subsidies in the United Kingdom where the cost of subsidies in the post-war years has been higher per cent of total expenditures than in the other European countries with which this project is concerned.(1) Other countries which have used price subsidies extensively, are the Netherlands,(2) Sweden, and Switzerland. France and Belgium have also made limited use of subsidies on certain basic foods.(3) Moreover, the report cannot be considered complete whithout some comparison with the use of subsidies in the United States.

Kinds of Subsidies

The food subsidies in the United Kingdom are administered by the Ministry of Food and the Agricultural Departments. They are designed to keep down the cost of food to the consumer, to improve nutrition, or to improve agricultural methods. (See Table 1.) The "cost-of-living" subsidies make up the greatest part of the food subsidies. In 1950-51, the "cost-of-living" subsidies comprised 86 per cent of all food subsidies.(4) By 1952-53, subsidies had been reduced, and those designed to curb the rise in living costs accounted for only 66 per cent of the total.

Purpose of the Food Subsidies

The food subsidies undertook to provide important foods to consumers at low prices in order to hold down the retail price index and prevent a rise in wage demands. The various measures to prevent inflation and growing pressure for higher wages were continued after the war, not only to stabilize the domestic economy, but also to keep down the costs of goods for export. It should be noted that the purpose of the British subsidies is to reduce the price of food to the consumer in contrast with the agricultural subsidies in the United States which raise the price of agricultural products to the consumer.

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(1) See United Nations, Statistical Yearbook, 1952 (New York: 1952), pp. 465-473.
(2) G.M. Verrijn Stuart,"Economic Policy in the Netherlands," Lloyds Bank Review (January, 1953), 37-44.
(3) U.S. Bureau of Labor Statistics, Wage Trends and Wage Policies, Bulletin No. 934 (1948).
(4) "Subsidies in Perspective, "Cheap Food," The Economist (March 8, 1952), p.572.

TABLE 1: ESTIMATED FOOD SUBSIDIES, UNITED KINGDOM, 1952-1953

Item	£ million
Subsidies administered by the Ministry of Food	297.4
"Cost of living" subsidies	220.9
Bacon	22.0
Bread	41.3
Flour (other than for bread)	13.3
Shell eggs	22.2
Meat (carcass)	25.6
Milk (liquid)	39.8
Butter	20.0
Cheese	2.1
Margarine (domestic)	13.0
Lard and cooking fat (domestic)	4.5
Sugar (domestic)	10.2
Miscellaneous	6.9
Welfare and milk-in-school schemes	46.5
Animal feeding stuffs	30.0
Subsidies adminstered by the Agricultural Departments	34.2
Attested herds scheme	9.7
Fertilizer subsidy	11.0
White fish subsidy	1.8
Plowing grants	6.3
Calf subsidy	5.4
Total food subsidies	331.6

Source: "Food Subsidies, 1952-53," Ministry of Food Bulletin, No. 693 (March 14, 1953), p. 18

The food subsidies, however, were only one of the anti-inflationary measures. The expansion of exports required both that the demand for goods at home should not keep exportable goods in the domestic market and that the costs of these goods be kept down in order to compete abroad. The food subsidies were helpful only in the latter purpose -- that of keeping wage costs down. An accompanying program of taxation was required to absorb the funds in the domestic market that otherwise might be used to bid for the export goods.(1)

Another purpose of the subsidies has been the encouragement of agricultural production at home. The assistance to agriculture reduces the amount of foreign exchange which must be used for importing food. In 1950-51, about two thirds of the food subsidies were paid on food produced at home, although about 60 per cent of the ration requirements were imported.(2) The net effect on the balance of payments of the subsidies to agriculture will depend in part on whether factors are diverted to agriculture which could be used more efficiently in the production of export goods.

The Amount of the Food Subsidies

The annual cost of the food subsidies rose from 1939 to 1949 and then turned downward. The following are the sums spent each year, 1939-1953, by the government for food subsidies (in millions of £ for years ending March 31):(3)

1939-40	15.8
1940-41	63.1
1941-42	95.8
1942-43	142.6
1943-44	182.5
1944-45	195.7
1945-46	265.5
1946-47	325.0
1947-48	391.6
1948-49	484.5
1949-50	424.8
1950-51	400.3
1951-52	410.0
1952-53	331.6

In the fiscal year 1948-49, the food subsidies amounted to 13 per cent of the total expenditures of the central government, but by 1952-53 the cost of the food subsidies had declined to six per cent of the total.(4)

(1) C.R. Ross, "The Food Subsidies and the Budget," Bulletin of the Oxford University Institute of Statistics, XIV, No.3 (March, 1952), pp.79-80.
(2) "Subsidies in Perspective, "Cheap Food". op. cit., p.85.
(3) The amounts for the years 1939-49 are from Ross, op. cit., p.78; for the years 1948-52 from United Nations, Statistical Yearbook, 1952 (New York: 1952), p.473; and for 1952-53 from "Food Subsidies, 1952-53," Ministry of Food Bulletin, No. 693 (March 14, 1953), p.18.
(4) Based on data from United Nations, Statistical Yearbook, 1952 (New York: 1952), p.473.

Table 2 shows the importance in the aggregate of the food subsidies to total personal expenditures for food and to total personal expenditures for all purposes from 1946 through 1951. The food subsidies, as a per cent of personal expenditures were:(1)

	Percent of total personal expenditure for food	Per Cent of total personal expenditure
1946	17.5	4.5
1947	18.5	5.0
1948	22.2	6.0
1949	19.7	5.5
1950	16.5	4.8
1951	15.2	4.5

The food subsidies were highest in 1948, both in amount and in relation to total personal expenditure.(2) The cost of the food subsidies in 1948 were £496 million which was 22 per cent of total expenditures for food and six per cent of total personal expenditures. Since 1948, the food subsidies have declined both in amount and in relative importance. Although the aggregate figures cannot be interpreted as showing the importance of the subsidies in the factory worker's budget, rationing and progressive taxation have kept the variation among economic classes below what might otherwise have been expected.

A survey by the Ministry of Food of family expenditures for food showed that, in 1950, the subsidies accounted for one-fifth of the food expenditures of factory workers' families. (See Table 3,) More than one half of their expenditures for food was for subsidized items. The table shows further that the per cent of expenditure on subsidized foods decreases as family income increases.

Another survey of total expenditures of 41 working-class families in 1949 found that 42.4 per cent of household expenditures were for food.(3) If this percentage is applied to the information regarding factory workers' expenditures for food in Table 3, the conclusion can be drawn that total family expenditure for factory workers would have been about eight per cent greater in the absence of the food subsidies.

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(1) Calculated from data in Table 2.

(2) The totals for food subsidies in Table 2 are for calendar years and, therefore, differ from those given earlier for fiscal years. There also may be some difference in the inclusion of agricultural subsidies.

(3) T. Schulz, "Family Expenditure in 1949. Part I," Bulletin of the Oxford University Institute of Statistics, XIII (April, 1951). 133.

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TABLE 2: TOTAL PERSONAL EXPENDITURES FOR FOOD AND RENT, FOOD SUBSIDIES AND HOUSING SUBSIDIES, UNITED KINGDOM, 1946-1951

£ million

Item	1951	1950	1949	1948	1947	1946
Total personal expenditures	9,737	9,076	8,643	8,297	7,752	7,014
Food	2,867	2,627	2,417	2,230	2,079	1,804
Rent, rates and water charge	701	677	659	648	631	602
Other	6,169	5,772	5,567	5,419	5,042	4,608
Food subsidies	437	434	475	496	385	316
Agriculture forestry and fishing	38	49	55	48	35	34
Fertilizers and molasses	5	12	14	12	8	7
Acreage payments	2	12	16	18	17	18
Attested herds	6	3	...	...	...	...
Other	25	22	25	18	10	9
Trading losses of the Ministry of Food(1)	334	324	357	390	296	237
Nutrition and health	65	61	63	58	54	45
Milk and welfare foods, etc.	40	36	37	36	35	30
School meals (Net cost to local authorities)	25	25	26	22	19	15
Housing subsidies	74	73	69	65	57	43
Central government	60	59	56	53	46	34
Local authorities	14	14	13	12	11	9

(1) Excludes the cost of milk and welfare foods schemes and the cost of food rationing

Sources: "Personal Expenditures at Current Market Prices," pp. 27-28. "Subsidies," p.44. "Current Grants to Persons from Public Authorities," p.45. Central Statistical Office, National Income and Expenditure, 1946-1951 (London: H.M. Stationery Office, 1952.)

TABLE 3: AVERAGE WEEKLY EXPENDITURE, PER HEAD OF HOUSEHOLD, ON THE MAIN SUBSIDIZED FOODS, 1950, BY INCOME CLASS

Item	Annual Income of Head of Household				
	£650 and Over	£400 to £649	£225 to £399(1)	Under £225(2)	All Households
Expenditures for food					
Main subsidized foods	8/2d.	8/3d.	8/1d.	8/2d.	8/1d.
Other foods	9/1d.	7/9d.	6/7d.	5/10d.	6/9d.
Total	17/3d.	16/0d.	14/8d.	14/0d.	14/10d.
Subsidized food expenditures as per cent of total food expenditures	47%	52%	55%	58%	54%
Cash value of subsidy	2/9d.	2/11d.	2/11d.	2/7d.	2/10d.
As per cent of expenditures for subsidized foods	34%	35%	36%	32%	35%
As per cent of expenditures for all foods	16%	18%	20%	18%	19%

Note: The main subsidized foods are butter, margarine, rationed cooking fat, sugar, tea, bacon, liquid milk, eggs in shell, rationed cheese, flour, bread, potatoes, and rationed fresh meat.

(1) Factory workers

(2) Old-age pensioners and casual workers

Source: Adapted from Great Britain, Ministry of Food, Domestic Food Consumption and Expenditure, 1950 (London: H. M. Stationery Office, 1952) p. 48

The same survey of food expenditures in 1950 by the Ministry of Food showed that the food subsidies were of greater value to families with children. (See Table 4.) Families with three or fewer children gained 1 d. per week per head more from the subsidies than families with four or more children. When the subsidies are expressed as a per cent of total food expenditure, however, the per cent which the subsidies represent of total food expenditures increases with the number of children. The subsidies represented one fourth of the total amount spent for food eaten at home by families with three children.

Table 5 shows the average value of the food subsidies for a family of four as a per cent of the average wages of a manufacturing worker. The data in the table are limited in their usefulness by the fact that the value of the subsidies is an average calculated by dividing the total cost of the subsidies by the population and that only one wage earner is assumed for the family. The declining importance of the food subsidies over the past six years is apparent. The drop in the value of subsidies to a family of four from 13 per cent of average wages in 1948 to only four per cent in 1953 is the result both of a reduction in the amount of the subsidies and of the rise in the average wage rate.

The Retail Price Index and the Subsidies

Although the ratio of subsidies to family expenditures or wages may be important to the housewife, the retail price index is much more influential in wage determination. Average weekly earnings have risen more since 1938 than either the retail price index or its food component. Since 1947, however, prices (as measured by the retail price index) have risen faster than wages. (See Table 6.) In July, 1953 retail prices were 41 per cent greater than in June 1947, while average weekly earnings had risen only 36 per cent. From January 1952 to July 1953, food prices had risen by 14 per cent. A large part of the rise in food prices can be attributed to the reduction in the food subsidies in the past two years.

The food subsidies have been a means of retarding the rise in the retail price index. If all the food subsidies had been removed on one of the dates indicated below, the index could have been expected to have increased by the following number of points (see Tabel 7):

Nov. 1, 1949	8.01 points
Oct.20, 1951	6.18 points
Jan.31, 1953	3.07 points

The figure for January 31, 1953 refers to the revised index with January 1952 as 100 and a set of new weights. Furthermore, the index averaged 114.1 in 1949; was 113.5 in October; 1951; and was 109.2 in January, 1953. Thus the decrease in the importance of the subsidy from 1949 to 1953 is slightly less than the figures above would indicate.

The above figures show, however, the declining value of the food subsidies from 1949 to 1953 as an instrument for preventing the rise in the retail price index. Whereas in November, 1949, the food subsidies were hold-

TABLE 4: ESTIMATED VALUE OF THE FOOD SUBSIDIES OF HOUSEHOLDS WITH ONE MALE AND ONE FEMALE ADULT AND VARYING NUMBERS OF CHILDREN, 1950(1)

(per head per week)

Type of Household	Annual Average	Annual Average as a Per Cent of Total Domestic Food Expenditure
All types	2/10d.	19%
No children	2/10d.	16%
1 or 2 children	3/1d.	21%
3 children	3/1d.	25%
4 or more children	3/0d.	27%

(1) Excludes old-age pensioner households

Source: Adapted from Great Britain, Ministry of Food, Domestic Food Consumption and Expenditure, 1950 (London: Her Majesty's Stationery Office, 1952), p. 73

TABLE 5: VALUE OF FOOD SUBSIDIES PER WEEK FOR A FAMILY OF FOUR IN RELATION TO AVERAGE WEEKLY WAGES IN MANUFACTURING, 1948-1953

	1953	1952	1951	1950	1949	1948
Value of food subsidies per week for a family of four(1)	6/9d.	9/5d.	12/8d.	12/4d.	13/2d.	14/11d.
Average wages per week for all workers in manufacturing(2)	156/7d.	150/10d.	139/10d.	127/5d.	120/10d.	116/10d.
Value of food subsidies as a per cent of average wages	4%	6%	9%	10%	11%	13%

(1) Average for fiscal year beginning April 1.
(2) 1948-1951, average for September; 1952, average for October; 1953, estimated average for July

Sources: Parliamentary Debates (Hansard), House of Commons (Feb. 18, 1953) col. 1229; "Britain's Food Supplies," Labor and Industry in Britain, XI, No. 3 (September, 1953), p. 105; International Labor Office, Year Book of Labor Statistics, 1951-1952 and 1949-1950; United Nation's, Monthly Bulletin of Statistics; Great Britain, Ministry of Labor, Monthly Digest of Statistics; The Conference Board

TABLE 6: INDEXES OF AVERAGE WEEKLY EARNINGS FOR ALL WORKERS AND OF RETAIL PRICES, UNITED KINGDOM, 1947-1953

	Average Weekly Earnings	Retail Price Index		
		All Items	Food	Rent and Rates
		June, 1947=100		
June, 1947	100	100	100	100
1948	106	108	108	99
1949	109	111	114	100
1950	111	114	123	101
1951	120	125	136	103
1952	130	136	...	...
July, 1953	136	141	...	...
		January 15, 1952=100		
1952	...	103	105	102
July, 1953	...	107	114	109

Source: Great Britain, Central Statistical Office, Monthly Digestic of Statistics

TABLE 7: ESTIMATED EFFECT OF FOOD SUBSIDIES ON RETAIL PRICE INDEX, UNITED KINGDOM. NOVEMBER, 1949, October 20, 1951, AND JANUARY 31, 1953

Commodity and Unit	Average Retail Price	Subsidy	Per Cent Increase in Retail Price if Subsidy Removed	Weight in Index of Retail Prices	Rise in Index of Retail Prices if Subsidy Removed
	(Shillings)			(Thousandths)	
November 1, 1949					
Bread 3-1/2 lbs.	11d.	6d.	54.5	23	1.25
Flour, 7 lbs.	1/9d.	1/1.5d.	64.3	7	0.45
Meat (carcass), lb.	1/5d.	3d.	17.6	25	0.44
Bacon and ham, lb.	2/3d.	1/2d.	51.9	18	0.93
Butter, lb.	1/6d.	1/6d.	100.0	19	1.90
Margarine, lb.	10d.	4.5d.	45.0)	12	0.45
Cooking fat, lb.	1/0d.	3.5d.	92.0)		
Cheese, lb.	1/2d.	1/0.75d.	91.0	5	0.46
Eggs (shell) doz.	3/0d.	1/3.25d.	42.4	13	0.55
Milk, qt.	10d.	2.5d.	25.0	32	0.88
Sugar, lb.	5d.	1d.	20.0	11	0.22
Tea, lb.	3/4d.	8.5d.	21.3	16	0.34
Potatoes, 7 lbs.	10d.	2d.	20.0	11	0.22
					8.01
October 20, 1951					
Bread, 3-1/2 lbs.	1/0d.	6.5d.	54.2	23	1.25
Flour, 7 lbs.	2/2.5d.	1/2.75d.	56.2	7	0.39
Meat (carcass),lb.	1/[illegible]	3.5d.	17.5	42	0.74
Bacon and ham, lb.	2/7d.	1/3.5d.	50.0	18	0.90
Butter, lb.	2/6d.	9.25d.	30.8	19	0.59
Margarine, lb.	1/2d.	3.75d.	26.8)	12	0.30
Cooking fat, lb.	1/4d.	3.5d.	21.9)		
Cheese, lb.	1/2d.	1/1.5d.	96.4	5	0.48
Eggs (shell) doz.	3/10.5d.	11d.	23.7	13	0.31
Milk, qt.	11d.	2.5d.	22.7	32	0.73
Sugar, lb.	6d.	1d.	16.7	11	0.18
Tea, lb.	3/8d.	8.5d.	19.3	16	0.13
Potatoes, 7 lbs.	No longer subsidized				...
					6.18
January 31, 1953					
Bread, 3-1/2 lbs.	1/3d.	3.5d.	23.3	27	0.63
Flour, 7 lbs. (1)	3/7d.	5.75d.	13.4	4	0.05
Meat (carcass) lb.	2/0d.	1.5d.	6.2	69	0.43
Bacon and ham, lb.	3/10d.	7.5d.	16.3	18	0.29
Butter, lb.	3/0d.	8.25d.	22.9	14	0.32
Margarine, lb.	1/4d.	1.75d.)	11.0	11	0.12
Cooking fat, lb.	1/6d.	2d.)			
Cheese, lb.	2/2d.	1.5d.	5.8	9	0.05
Eggs (shell) doz.(1)	4/0d.	10d.	20.8	22	0.46
Milk, qt.	1/1d.	1.75d.	13.5	40	0.54
Sugar, lb.(1)	7d.	1.25d.	17.9	10	0.18
Tea, lb.	No longer subsidized				...
Potatoes, 7 lbs.	No longer subsidized				...
					3.07

(1) Subsidy has now been removed

Sources: "Arithmetic of the Subsidies," The Economist (April 15, 1950), p.847; "Tackling the Food Situation, "The Economist, (December 1, 1951) p. 1346; "Britain's Food Supplies," Labor and Industry in Britain, XI (September, 1953) p. 106; Great Britain, Ministry of Labor and National Service, Interim Index of Retail Prices, Method of Construction and Calculation, Revised edition (London: H.M. Stationery Office, 1952). p.32

ing the retail price index eight points below its level on that date; by January 1953, the immediate resulting rise in the index, if all the subsidies had been removed, would not have been much more than three points. After the removal of the subsidies from flour, eggs, and sugar, later in 1953, the remaining subsidies serve to prevent a rise of hardly more than two points in the index. Today the subsidies can be considered of slight importance in holding down wages through preventing a rise in the cost of living.

The Incidence of the Subsidies

The British food subsidies were not arranged to give relief only to those families in need of assistance. They were applied to keep down the prices of the basic foods, regardless of the economic status of the consumer. The cost of the subsidies was not covered by special taxation of selected economic groups. The burden of the subsidies can only be said to have been distributed in the same way as total taxation. The benefits of the subsidies favored the low-income families (see Table 3.)

The rapid reduction of the subsidies since 1952 has been accompanied by reductions in taxation and increases in family allowances to offset the effect of higher prices caused by the smaller subsidies. The changes in the income tax in 1952 consisted of an increase in earned income relief, an increase in exemptions and a reduction of the rates in the lower income brackets.(1) The budget of 1952 proposed a reduction of the annual cost of food subsidies from £410 million to £250 million. This reduction of £160 million meant an average of 1s. 2-1/2 d. per capita per week or £3.15 per capita per year.(2)

Table 8, from a study by C. R. Ross, shows the net effect of the changes in income taxation, subsidies, and family allowance by type of family and income. Single persona dn childless married couples with annual earnings of £350 to £400 (a factory worker's earnings) receive a net gain as a result of the changes in subsidies and income tax. Families with one child in the £400 income class, however, suffer a loss by the decreased subsidy in excess of the gain on income tax; and those with two or more children receive no advantage from the tax change, while their gain in family allowance is less than the loss through the reduced food subsidies. The net effect of the several changes favors somewhat the higher income groups and the smaller families.

International Comparison of Food Price Levels

Foreign food subsidies alone cannot account for the wide difference in food costs between the United States and European countries.

(1) Great Britain, Chancellor of the Exchequer, Financial Statement, 1952-53 (London: H.M. Stationery Office, 1952), p.25.
(2) Ross, op. cit., pp.67 and 195.

TABLE 8: NET GAIN OR LOSS TO SELECTED TYPES OF FAMILIES FROM CHANGES IN INCOME TAX, FOOD SUBSIDIES AND FAMILY ALLOWANCES IN THE BUDGET OF MARCH, 1952

In £

Income (earned) in Pounds	Gain from Income Tax	Gain from Family Allowance	Extra Tax Liability	Loss on Subsidy	Net Gain or Loss
Single person					
200	2.15	...	...	3.15	- 1.00
225	4.75	...	...	3.15	+ 1.60
500	18.15	...	...	3.15	+15.00
1,000	36.55	...	...	3.15	+33.40
Married couple without children					
250	1.50	...	...	6.30	- 4.80
300	4.00	...	...	6.30	- 2.30
350	9.15	...	...	6.30	+ 2.85
500	14.80	...	...	6.30	+ 8.50
1,000	41.30	...	...	6.30	+35.00
Married couple with one child					
300	...	...	...	9.45	- 9.45
350	3.00	...	...	9.45	- 6.45
400	7.85	...	...	9.45	- 1.60
500	18.15	...	...	9.45	+ 8.70
1,000	48.45	...	...	9.45	+39.00
Married couple with two children					
400	...	7.80	...	12.60	- 4.80
500	11.65	7.80	1.15	12.60	+ 5.70
1,000	55.35	7.80	3.00	12.60	+47.55
Married couple with three children					
500	...	15.60	...	15.75	- 0.15
600	15.50	15.60	2.35	15.75	+13.00
1,000	54.000	15.60	6.75	15.75	+48.10

Source: C. R. Ross, "The Food Subsidies and the Budget a Correction," Bulletin of the Oxford University Institute of Statistics, XIV No. 6 (June, 1952) p. 195

The food price levels in October, 1951 of European countries as compared with the food price level of the United States are shown by the following index numbers:(1)

United States	100
Belgium	81
France	88
Germany (Federal Republic)	78
Italy	83
Netherlands	57
Sweden	64
Switzerland	81
United Kingdom	46

The indexes are made from retail prices of 17 foodstuffs in the capital city and other urban areas of each country. The costs of food "baskets" conforming to the local patterns of consumption are compared by using the official exchange rates.(2)

The comparison through official exchange rates is useful in an examination of factors influencing international trade. Food prices play an important part in every consumers' price index and, thus, in wage determination. If food costs in the United Kingdom are less than one-half food costs in the United States, the wage costs of export goods from the two countries, when the costs are translated into a third currency, must decidedly favor the United Kingdom. Food subsidies, however, even when amounting to one fifth of food expenditures (see Table 3), can account for only a part of the great difference in food costs between the two countries.

Summary

The food subsidies may have had more effect than is apparent from their importance relative to expenditures, wages, and the retail price index. If earlier reductions in the subsidies would have released a much greater inflation through resulting increases in wage demands, increased costs, increased prices, and so on through the familiar spiral, then the fact that the subsidies immediately held down the retail price index by eight points, in 1949, may have succeeded in curbing an ultimate rise of many times eight points.

The food subsidies, however, were only one method used along with other restraints on prices, including high taxation, rationing and the holding back of wage demands. It must be recognized that the United Kingdom's expenditures on food subsidies have been declining and today are relatively small; and that their purpose was to prevent inflation and hardship at home and was, only in part, directed towards improving Britain's competitive position in foreign trade.

(1) "International Comparisons of Food Price Levels," International Labor Review, Statistical Supplement, LXVI (Oct., 1952), p.99.
(2) Ibid., p. 97.

EXPENDITURE ON RENT AS A PERCENTAGE OF TOTAL FAMILY EXPENDITURE, 1947 and 1950

Country	1950	1947
Austria	3.6a	...
Belgium	7.0	5.6
Czechoslovakia	...	3.3
Denmark	...	8.8b
France	3.0	1.3b
Germany	9.2a	...
Ireland	4.6a	4.8
Italy	1.0-1.5	0.5
Netherlands	5.5	6.7
Norway	...	7.2
Sweden	8.1	8.4
Switzerland	13.2a	...
United Kingdom	7.0	7.6

a 1949
b 1948

Source: United Nations, "Economic Bulletin for Europe," Vol. 4, No. 1, April, 1952

CONTRIBUTION OF THE PUBLIC AUTHORITIES TO THE FINANCING OF HOUSING IN 1949

AS A PERCENTAGE OF TOTAL EXPENDITURE ON HOUSING

Country	Direct Building	Subsidies	Loan	Total
Switzerland	...	18.75	3.50	22.25
Sweden	18.30	4.00	4.00	26.50
Denmark	0.25	1.25	32.75	34.25
Italy	16.00	1.00	17.25	34.25
Germany	...	...	...	37.00
Belgium	7.75	12.75	26.75	47.25
Norway	1.00	9.75	52.50	63.25
France	40.50	27.75	0.50	68.75
Netherlands	33.50	15.25	27.00	75.75
United Kingdom	1.50	14.00	62.50	78.00

Source: United Nations Economic Commission for Europe, "Methods and Techniques of Financing Housing in Europe," March, 1952

Section V

Subsidies and other state aids to exporters.

SECTION V

Summary

With most countries practicing a wide range of import and exchange restrictions the countries producing electrical goods domestically can simply apply quantitative import controls to keep out foreign-produced goods. The importance of export aids is most keenly felt by U.S. manufacturers in competing in "third" markets where domestic industry does not manufacture similar items and, consequently, the need to protect it does not exist.

Export aids granted by governments may be of one or all of the following three principal types: 1) Subsidies; 2) Export credit facilities; and 3) Export guarantees against losses.

Export subsidies with a dumping feature were denounced under the original ITO Charter, but not domestic subsidies paid to stimulate domestic production having only a small effect upon exports. The present GATT provisions do not classify various forms of tax relief and tax refunds as export subsidies although they may contribute to substantial price advantages as in the case of France. While most European countries and Japan pay direct or indirect subsidies to promote exports, the United States limits its direct export subsidies to a few agricultural commodities.

For many years export credit facilities, of special importance in the case of capital goods exports such as heavy electrical equipment, and export insurance against a great number of risks not of the common commercial type have been available to exporters in practically all foreign countries as contrasted with the United States where business opinion in the past was opposed to extensive government operations in the fields of export financing and risk insurance. To a limited extent and only supplementary to commercial financing has the Export-Import Bank of Washington extended or underwritten credits for export transactions. And in spite of bills introduced in the Congress in recent years no comprehensive legislation on risk insurance was passed to date. Since 1947 the International Bank for Reconstruction and Development has provided credit facilities for equipment purchases for electric power projects, mostly in the underdeveloped countries.

SUBSIDIES AND OTHER EXPORT AIDS

Any adequate discussion of subsidies and other incentives available to exporters in various countries must include all export aid devices, including those that do not necessarily or directly contribute toward price disparities between United States and foreign-manufactured electrical goods, but that are important in the successful competition for orders, especially in third markets. For this reason, the following analysis is not limited to a discussion of the various forms of direct and indirect subsidies, but also includes special export credit and insurance facilities. The latter may not be reflected in price quotations, but they govern credit terms -- often the decisive criterion in the selection of a supplier of capital goods, such as heavy electric power equipment.

In a world in which quantitative import restrictions and tariffs are widely maintained as direct controls on the flow of international trade, competition in the domestic market by a product subsidized abroad can be controlled by the application of import controls. The story is different when it comes to third markets where goods produced without aid find it difficult to compete on equal terms with goods subsidized in some form. And this is the area where the effects of subsidies are most keenly felt in present circumstances. (1)

A growing distortion of competitive conditions in international trade as a result of various export aid practices and an increasing concern about Government interference in the development of world markets has caused international organizations such as the International Monetary Fund (IMF) and the Organization of European Economic Cooperation (OEEC) to take an active interest in the various export aid practices.(2) At the Eighth Session of the Contracting Parties of the General Agreement on Tariffs and Trade (GATT) at Geneva in October 1953, Government representatives of various countries appeared "frightened" by the growth and effects of export subsidies.(3) The United States which took great pains to help the Italian economy get back on its feet during the postwar years was accused of driving Italy out of the market for oranges in Northern and Central Europe. And the United Kingdom delegate at the session announced that his Government would press for tighter provisions in the General Agreement against subsidies when a general revision of the trade rules of GATT was considered in 1954.(4)

Export aids provided by governments may be broadly classified in these three principal categories: 1) Subsidies; 2) Export credit facilities; 3) Export guarantees against losses.(5) Only an evaluation of total effects

(1) GATT: International Trade 1952, p. 63
(2) Bundesauskunftstelle fuer den Aussenhandel: Direkte Exportfoerderungsmassnahmen konkurrierender Europaeischer Laender, p. 5
(3) The New York Times, October 8, 1953
(4) Ibid.
(5) Export assistance in the foreign exchange field, such as special import rights and export bonus schemes, have been discussed in the chapter on trade and exchange restrictions and their discussion is, therefore, omitted here.

of the devices in their overall application seems possible. Export aids did not originate after World War II although postwar "export drives", in order to stimulate exports primarily to the dollar area, were accompanied by all kinds of export incentives offered by many governments. Actually there is a long history of export assistance. As early as 1921 the United States Congress passed antidumping legislation which permitted the Government to impose countervailing duties on goods threatening to flood the U.S. market solely because of irresponsible price cutting of foreign goods as a result of Government subsidies abroad.(1) Similarly, the introduction of export credits with Government participation and export insurance under Government auspices dates back to the years following World War I. In 1920 TREDEFINA ("Treuhandverwaltung fuer das deutsch-niederlaendische Handelsabkommen") was organized to administer a credit of the Netherlands Government which was intended to make possible short-term financing of certain German exports.(2) Also as early as 1920 Government insurance to cover certain types of credit risks not insurable with private insurance was provided for in the British Overseas Trade Credits and Insurance Act of that year.

Subsidies: Governments may grant subsidies to exporters or to producers. While the nature of a subsidy may be similar in each instance, the purpose may be entirely different. Export subsidies, in many instances, may be granted to enable domestic producers of, say, agricultural commodities to market an actual surplus abroad. Producer subsidies, on the other hand, are usually intended to stimulate production of a given commodity, in response to some indicated demand frequently without special reference to marketing possibilities abroad. Production subsidies appear to be more frequent than export subsidies. Quite obviously, however, they can also affect the volume of foreign trade in that they may result in the sale of a product abroad at a price which is lower than the domestic price. The Havana Charter for an International Trade Organization made a distinction between export subsidies with a dumping feature and domestic subsidies having merely an incidental effect upon exports. The General Agreement on Tariffs and Trade does not consider tax remissions, tax exemptions and other forms of relief granted by some governments to their exporters on goods sold abroad as export subsidies, (3) although such aid permits export prices to be lower than domestic prices since certain important cost factors are eliminated or reduced. Far-reaching refunds of social security charges and tax exemptions as granted in France have been given increasing attention by United States Treasury officials, but, in the absence of outright complaints from business, no formal study with a view to recommending the imposition of countervailing duties has been undertaken.

A direct subsidy payment may be made in fixed amounts or as a fixed percentage of the value of the goods exported, with a greater percentage on higher turnover so as to act as a strong export incentive. Excise, turnover and sales tax exemptions may be granted for goods being exported. Manufacturers' taxes and transmission taxes, often levied repeatedly each time the goods change hands while they pass through various stages of processing, often are reimbursed by granting a percentage refund of the value of the final product exported.

(1) Section 201, Antidumping Act of 1921.
(2) "Staatliche Exportfoerderung in der Bundesrepublik und in Ausland" in Boersen und Wirtschaftshandbuch 1953, p. 148
(3) GATT, op. cit., p. 64

Numerous other forms of direct export assistance which may be better classified as indirect subsidies to promote export activities of various countries have become widely used. The United Kingdom, by importing raw materials on Government account which are exempt from import duties, provides the export industries of the country with supplies on a preferential and cheaper basis.(1) In the Netherlands and the United Kingdom domestic prices were stabilized by the Government - a step which helped improve the competitive position of the countries' exports during periods of rapidly increasing inflationary pressures throughout the world such as that which followed the outbreak of the Korean conflict. An additional incentive is offered to Netherlands exporters in the form of tax-free export reserves amounting to one to three percent of export volume. Similarly, investments in the Netherlands made to increase exports benefit from special "fast write-off" provisions applicable for the years 1953 to 1957. Almost identical privileges have been granted to German exporters. Government participation in such export promotion costs as marketing research, product standardization and quality control, foreign trade fairs, etc. as provided by the Italian Government to small and medium-sized companies and by the United Kingdom to stimulate dollar exports, must be included in any listing of indirect Government subsidization. Finally, even progressive income tax rates as they are imposed in the United Kingdom are said to be an aid - if only accidental - to stimulate exports. Because profits are largely taxed away British industry is said upon occasion to have resorted to exporting at or even below cost to cancel out tax liabilities otherwise incurred as a result of profits from domestic business established during a taxable year.(2)

Finally, a few other practices may be properly cited as examples of indirect subsidies. In certain countries, the Government, eager to promote the exportation of certain designated commodities, permits particularly favorable rates at which exporters may exchange proceeds from their exports into the national currency. Here the nature of an indirect subsidy is based on the fact that the Government pays an amount for the foreign currency earned which is higher than the officially fixed rate of exchange.(3)

Export Credit Facilities: Since the war adequate credit facilities granted to the buyer often have become a prerequisite for obtaining an order, irrespective of attractive prices, superior quality and convenient delivery terms. Tightness of the private capital market in most countries has induced exporters increasingly to bring pressure to bear upon their governments to provide such credit facilities as will permit the extension of 8 and 10-year credits to buyers of heavy electrical equipment needed for new electric power projects, of ships, and of railway equipment. Notwithstanding the strong comeback staged by the manufacturers of electric goods in the Federal Republic of Germany as evidenced by rapidly expanding exports, these manufacturers have complained that, unless their Government provides more adequate credit facilities, they are hampered in their efforts to meet the credit terms demanded by customers in Latin American and other underdeveloped countries who lack the funds to make prompt payment for what are in

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(1) "Staatliche Exportfoerderung in der Bundesrepublik und im Ausland", op. cit., p. 148
(2) Ibid. Also Bundesauskunftstelle fuer den Aussenhandel, op. cit., p. 34
(3) Netherlands Export Finance Corporation, op. cit., p. 3

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effect basic investments designed to develop their economies and expand their productive facilities.(1) While the London money market has been able to meet the demand for self-liquidating short-term "cash" and "acceptance" transactions, banking houses are reportedly unwilling to tie up their resources in long-term credits. The British Government declined to give recognition to this situation when the Chancellor of the Exchequer said: "On the whole I believe that (our banking and financial system) does (provide adequate finance for our exporters) and if there is a problem here, it is rather one of making more widely known the financial facilities that already exist."(2) But the Associated Electrical Industries, Inc. - the large British electrical manufacturing combine - have stated that "success or failure (to secure export orders for large capital projects) depends more and more on the ability of the manufacturer to negotiate long-term finance. . . Our financial resources do not permit us to bear the full burden of financing capital schemes of this kind. If we are to continue to secure our share of the export market, we must expect the finance to be arranged mainly by the City of London and the Government."(3)

Even in the United States, the facilities of the Export-Import Bank of Washington, a Government agency established in 1934 to further U.S. foreign trade without competing with private banking institutions, have been extensively utilized. The Bank has underwritten private bank loans and credits and extended lines of credit of its own within the limits of its lending authority (at present it is $4.5 billion) for many capital goods transactions which include U.S. supplies of heavy electrical equipment purchased by foreign countries in connection with electric power projects, particularly in Latin America and Africa. Numerous transactions were arranged with the U.S. exporter participating in the credit extension since the end of World War II.(4)

Special government credit assistance available to exporters in a number of countries is not limited to the extension of credit that cannot be obtained on a commercial basis, but may include the manipulation of interest rates to keep them artificially low for the business community at large or provide for specially low interest rates in connection with governmental export credits. This results in lower credit costs to exporters and helps increase the products' competitive price position in foreign markets. In Germany the Bank Deutscher Laender exercises such general control over interest rates. The Belgian Institut de Reescompte et de Garantie (Rediscount and Guarantee Institute), a semi-Government institution, accepts commercial paper based on export and import financing operations and eligible

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(1) "AEG im Zeichen der Konsolidierung" in Der Volkswirt, April 25, 1953, p. 24. Also "German Export Credit Functions Transferred" in Foreign Commerce Weekly, July 13, 1953, p. 9, and "West Germany Seeks to Improve Export Credit" in Foreign Commerce Weekly, August 24, 1953, p. 5.

(2) Budget Speech of Chancellor of the Exchequer Hugh Butler of April 14, 1953.

(3) Associated Electrical Industries, Ltd.: Annual Report for 1952, p. 9. (Italics ours.)

(4) Details of individual credits granted by the Export-Import Bank are published in the Bank's Semiannual Report to Congress.

for rediscounting by the National Bank of Belgium but having a maturity of longer than 120 days and grants lower-than-usual interest rates in connection with dollar exports and EPU area imports.(1) Similarly, export paper having a maturity in excess of two years is purchased by the Société Nationale de Credit á l'Industrie (National Industrial Credit Society). France permits private banks to exceed specified credit ceilings imposed upon them individually if they finance dollar exports. In February 1953 the discount period for commercial paper presented by French exporters was extended from 3 to 6 months and the discount rate reduced from 4 to 3.5 percent. The Netherlands Government sponsored the establishment of a special Export Finance Corporation in 1951 and provided the institution with a guarantee against "liquidity shortages" not exceeding 50 million guilders. The Export-Import Bank of Japan, authorized to finance capital goods exports, is permitted to extend credits with commercial bank participation. Originally 75 percent of the credit could be provided by the Export-Import Bank in combination with 25 percent commercial bank credits. The ratio has now been changed to 90 percent and 10 percent, respectively. Under a bill approved by the Italian Government for submission to Parliament, Mediocredito (the Italian Central Institute for Medium-Term Credit Financing) would administer a fund of 40 billion lira to finance medium-term credits in connection with special exports and be empowered to discount papers and advance money against deposit of such papers.(2)

Export Insurance and Guarantees: Governmental export insurance and guarantee practices have rapidly increased in number and application around the globe since the end of World War II Risks, insurance for which is not ordinarily written by private insurance companies, may broadly be grouped as follows: political, catastrophic, commercial, economic, production loss, and cost fluctuations.

Political risks insured by Government institutions include war, revolution in the buyer's country, civil unrest, seizure by foreign government. "Catastrophic" risks include losses due to earthquakes, floods and other natural phenomena. Commercial risks which do not fall within the province of customary private insurance coverage are insolvency of the buyer or the buyer's failure to make payment within a specified period of time. Economic risks may consist in the exporter's inability to obtain remittance in his country's currency due to exchange restrictions imposed by the country in which the customer resides, losses resulting from adverse changes in exchange rates, sterilization of funds in blocked accounts abroad, conversion into a foreign currency not agreed upon, changes in clearing fees collected in connection with transactions governed by bilateral trade and payments agreements or levied, as in the case of Switzerland, in connection with transactions coming under the EPU settlement procedure. A guarantee against the possibility of production losses due to any of the foregoing causes or resulting from the cancellation of export licenses and the imposition of export restrictions is available in some countries. Similarly, protection against fluctuations in production costs resulting from internal price rises, increases in the cost of raw materials and labor - limited in France to

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(1) It also offers special facilities for financing United States "offshore" purchases.

(2) "Exportkreditversicherung in Italien" in Neue Zuercher Zeitung, September 22, 1953, Foreign Edition, p. 10.

mechanical and electrical products - is designed to "underwrite" firm export prices quoted by exporters. A relatively new type of guarantee which was developed in recent years as part of concerted drives to promote exports to the dollar area is export promotion insurance which guarantees compensation for a stated percentage of the cost of market surveys, product development and test, advertising and sales promotion, and the keeping of inventories abroad in case expected exports do not materialize.

In most instances governmental risk guarantees require the exporter to participate in the risk to a certain extent by limiting claims to as low as 70 percent of the total credit or transaction covered, depending upon the type of risk involved. Often insurance is actually written by private insurance companies, with governments merely underwriting or reinsuring the risks. Export credit insurance and guarantees are most highly developed in the important trading nations like the United Kingdom, France, the Netherlands, Switzerland and, more recently, the Federal Republic of Germany. Belgium, Sweden and Japan offer only certain types of coverage whereas Italy is only considering the adoption of an insurance and guarantee program.(1)

As an example of a rapidly growing use during the postwar years of Government insurance facilities, activities of the British Export Credit Guaranty Department, set up in 1930 under the Secretary of the Department for Overseas Trade, may be cited. As reported by the President of the United Kingdom Board of Trade on March 6, 1952, an estimated 15 percent of total United Kingdom exports were covered by export credit guarantees in the year 1951-52 as compared to only 8 percent in 1946-47.

U.K. Exports and Reexports Covered by Export Credit Guarantees

Year	Proportion of Total Exports %	Value of Shipments Declared under ECGD Guarantees (£ million)
1946-47	8.0	82.9
1947-48	8.3	108.3
1948-49	9.6	168.6
1949-50	11.5	217.9
1950-51	12.6	295.4
1951-52	15.0 (Est.)	425.5

Credit insurance on foreign transactions is not written in the United States, either privately or by the Government. Even domestic credit insurance is not written by any private company domiciled in the United States. Until recently risk insurance beyond that for normal commercial risks which, of course, may be covered by privately written insurance, was limited to marine and aviation war risk insurance. Such insurance was handled by private companies with the Government actually providing only reinsurance facilities,

(1) "Exportkreditversicherung in Italien", op. cit.

i.e. the Maritime Administration and the Defense Air Transport Administration, both agencies of the Department of Commerce, are empowered to provide coverage if war risk insurance is withdrawn by private companies because of international developments.

A somewhat stronger interest in Government participation in risk insurance has manifested itself more recently. Under an amendment to the Export-Import Bank Act of 1945[1] which was approved by the President on May 21, 1953, the Export-Import Bank of Washington was authorized to "provide insurance in an aggregate amount not in excess of $100 million outstanding at any one time for the benefit of citizens of the United States . . . against the risks of loss of or damage to tangible personal property of United States origin which is exported from the United States in commercial intercourse and is located in any friendly foreign country . . . (resulting) from hostile or warlike action in time of peace or war . . . or from an order of any government . . . confiscating, expropriating or requisitioning such property . . ." Essentially this type of insurance coverage is similar to guarantees against loss of inventories kept abroad which is available in many other countries. The U.S. coverage was expected to benefit primarily exporters of agricultural staples such as cotton who make it a practice to keep stocks abroad to which they retain title.

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(1) Public Law 30, 83rd Congress, 1st Session.

COUNTRY SUMMARIES OF SUBSIDIES AND OTHER EXPORT AIDS

1. United Kingdom
2. France
3. Federal Republic of Germany
4. The Netherlands
5. Belgium
6. Sweden
7. Italy
8. Switzerland
9. Japan
10. United States

UNITED KINGDOM

Tax Relief

1. Exports exempt from purchase tax.

2. Reduction of internal taxes effective April 13, 1953, intended to reduce prices and thus stimulate exports.

3. "Empire Preferences": British goods admitted in Commonwealth countries upon payment of duties reduced by 15 to 45 percent.

Export Financing

1. No specific program. In some cases the Export Credits Guarantee Department guarantees credits granted by commercial banks.

Export Insurance and Guarantees

1. Administered by the Export Credits Guarantee Department (ECGD), Department for Overseas Trade, Board of Trade.

2. Coverage, 50 to 90 percent, depending upon type of risk insured. Premium rates, ½% to 2%.

3. Risks covered:
   (a) Political (war, revolution in buyer's country, civil war and commotion, extra freight charges due to division of cargo).
   (b) Catastrophic - None.
   (c) Commercial (Buyer's insolvency or failure to pay within 12 months from due date).
   (d) Economic (Exchange restrictions or lack of foreign exchange in buyer's country that prevent the transfer of pound sterling to the U.K.).
   (e) Production losses (resulting from above causes, from cancellation or non-renewal of export licenses granted, or from introduction of new export restrictions previously not applicable).
   (f) Price fluctuations - of unspecified nature.
   (g) Special guarantees:
      Under a 1949 Act transactions undertaken in the national interest such as
      (1) Sales development and expansion in a desirable market (dollar export drive).
      (2) Exportation of a large domestic surplus of a particular commodity.
      (3) Inventories kept abroad.
      Up to 50% of cost covered.

FRANCE

Tax Relief

1. Exemption from:
   (a) Production tax (taxe unique à la production and taxe à la valeur ajoutée, 15.35% or 6.35%).
   (b) Sales or turnover tax (taxe sur les transactions, 1%).
   Both are assimilated in the "taxe sur le chiffre d'affaires". Discounts of 11% to 14% allowed on dollar sales to tourists as a refund from production and transaction taxes.

2. Refund of:
   (a) Social charges (sickness, accident, unemployment insurance, family allowances).
   (b) Payroll taxes.
   Refund is 100%. Social charges and payroll taxes amount to 28.1% of salaries. Settlement monthly.
   (c) Fiscal taxes. Refund is a percentage - 5.45 or 8.72%, depending upon type of commodity - of export price; intended as a compensation for taxes on the product during preceding stages of manufacture.

Export Financing

1. Credit volume ceilings imposed upon individual commercial banks lifted in the case of exports.

2. Discount period for commercial paper presented by exporters 6 instead of 3 months.

3. Discount rate for export paper reduced from 4 to 3.5 percent.

4. C.I.T.E.R. (Compagnie Intercontinentale d'Etudes et de Réalizations), supplied with capital by a Government-owned and a private commercial bank, facilitates dollar export transactions and extends loans to increase production for export.

5. Banque Française du Commerce Extérieur (capital subscribed by Government-financed institutions) guarantees commercial paper; this permits exporter to draw immediately on the Bank of France.

Export Insurance and Guarantees

1. Administered by Compagnie Francaise d'Assurance pour le Commerce Extérieur (C.F.A.C.E.).

2. Coverage, 65% to 90%.
   Premium rates, ½% to 2%.

3. Risks covered:
   (a) Political (same as U.K.).
   (b) Catastrophic (earthquakes, floods, other natural phenomena).
   (c) Commercial (same as U.K.).
   (d) Economic (adverse change in exchange rate, blocked accounts, delay in transfer of funds).
   (e) Production losses (same as U.K.).
   (f) Price fluctuations (increase of raw material and labor costs; covered by Commission des Garanties et du Crédit au Commerce Extérieur rather than C.F.A.C.E.).
   (g) Special guarantees
   Same as U.K., except that risks incident to the exportation of commodities that are in surplus domestically are not covered.

FEDERAL REPUBLIC OF GERMANY

Tax Relief

1. Exemption from:
   (a) Turnover tax (Warenumsatzsteuer).
   (b) Insurance tax on shipping charges if insurance includes forwarding of the shipment abroad.

2. Refund of 1% to 3% to compensate for turnover tax levied during earlier stages of production.

3. Special tax benefits:
   (a) Tax-free export reserves (1% of value of shipments of exporter, 3% of value of shipments of exporting manufacturer).
   (b) Tax-free amount in determining taxable profit. (Percentage is same as under (a))

Export Financing

1. Administered by the Deutsche Ausfuhrkredit A.G. (German Export Credit Bank). Credit financed up to 80 percent, with exporter participation.

2. Credit terms:
   (a) Long-term credits (1 to 4 years, in exceptional cases longer; interest 7%).
   (b) Medium-term credit (6 months to 2 years; interest 5½%).

3. Maximum credit, DM 5 million (with certain exceptions).

4. Bank deutscher Laender (National Central Bank) keeps interest rates low to help exports compete abroad.

Export Insurance and Guarantees

1. Administered by Hermes Kredit Versicherungs A.G.

2. Coverage, 75% to 95%.
   Premium rates, ½% to 1½%.

3. Risks covered:
   (a) Political (seizure by foreign government, war, revolution).
   (b) Catastrophic - not known.
   (c) Commercial (same as U.K.).
   (d) Economic (blocking of transfers, conversion into foreign currency not agreed upon).

(e) Production losses (same as U.K.).
(f) Price fluctuations - not known.
(g) Special guarantees - Unknown.

Note: Exporter carries 25% of the commercial and 15% of the political risk himself.

THE NETHERLANDS

Tax Relief

1. Exemption from turnover tax.

2. Proposed refund of "compensation tax" (a payroll tax).

3. Special tax benefits:
   (a) Tax-free export reserves similar to those permitted by Germany.
   (b) Faster write-offs of investments made during 1953-1957 in connection with exports.

4. Reduced income tax rates and other tax relief, to take effect Jan. 1, 1954, intended to assure stable domestic prices. This may help competitive position of Netherlands products abroad.

Export Financing

1. Administered by the Export Finance Corporation (N.V. Export-Financiering-Maatschappij).

2. Credit terms:
   (a) Long-term credits
   (b) Medium-term credits
   Credits mainly intended for capital-intensive export transactions (shipbuilding, railway equipment), particularly exports to Latin America, Indonesia, the Near East.

3. Government guarantees Export Finance Corp. against "liquidity shortages" of up to 50 million guilders.

Export Insurance and Guarantees

1. Administered by the Netherlands Credit Insurance Co., Ltd. (Neederlandsche Credietverzekering Maatschappij, N.V.), a private company under the supervision of a ministerial Guarantee Commission.

2. Coverage, 70 to 90%.
   Premium rates not known.

3. Risks covered:
   (a) Political (same as U.K.).
   (b) Catastrophic (same as France).
   (c) Commercial (same as U.K.).
   (d) Economic (exchange rates, transfer).

(e) Production losses (same as U.K.).
(f) Price fluctuations - not known.
(g) Special guarantees (same as France).

Note: Exports originating in one of the BENELUX countries and consigned to another BENELUX country are (a) free from import duties in the other country and (b) subject to excise and other tax levies made increasingly uniform for all BENELUX countries.

BELGIUM

Tax Relief

1. Exemption from:
   (a) Transfer tax (taxe sur les transmissions, mostly 4.5%).
   (b) Invoice tax (taxe de facture, 0.45%).

Export Financing

1. Administered by the National Institute for Rediscount and Guarantee (Institut de Réescompte et de Garantie) and National Industrial Credit Society (Société Nationale de Crédit à l'Industrie), both para-statal institutions.

2. Credit terms:
   (a) National Institute for Rediscount and Guarantee accepts commercial paper of longer than 120 days maturity eligible for rediscounting by the Belgian National Bank; grants lower-than-usual interest rates in connection with exports to the dollar area; and offers special financing for U.S. offshore purchases.
   (b) National Industrial Credit Society purchases export paper with maturities of more than 2 years at more favorable interest rates.

3. Commercial bank loans guaranteed by the Government to a very high amount.

4. COMIFEX, a consultative committee for the coordination of medium-term credit, has representatives of Government, public credit institutions, and banking circles.

Export Insurance and Guarantees

1. Administered by Office National du Ducroire, a Government institution.

2. Coverage, 80% to 85%.
   Premium rates: Short-term, 0.30% to 1.25%; long-term, 3% to 5%.

3. Risks covered:
   (a) Political (same as U.K.).
   (b) Catastrophic (same as France).
   (c) Commercial (limited to foreign public bodies).
   (d) Economic (same as Netherlands).
   (e) Production losses (same as U.K.).
   (f) Price fluctuations - not known.
   (g) Special guarantees (same as France).

Note: Exports originating in one of the BENELUX countries and consigned to another BENELUX country are (a) free from import duties in the other country and (b) subject to excise and other tax levies made increasingly uniform for all BENELUX countries.

SWEDEN

Tax Relief

1. No tax remissions or other tax relief available to exporters.

Export Financing

1. No direct Government aid in export financing. Assistance limited to repayment guarantees available to commercial banks for credits extended to exporters, up to 75%.

Export Insurance and Guarantees

1. Administered by the Swedish Export Credit Board, a Government institution.

2. Coverage, 75%, in exceptional cases 85%.
   Premium rates, not known.

3. Risks covered:
   (a) Political - not known..
   (b) Catastrophic - not known.
   (c) Commercial (buyer's insolvency).
   (d) Economic (blocked accounts, general moratoria; exchange rate fluctuations).
   (e) Production losses - None.
   (f) Price fluctuations - None.
   (g) Special guarantees (losses on consignment stocks in hard-currency countries, aid in connection with market studies).

ITALY

Tax Relief

1. Refund of:
   (a) Turnover tax (refund limited to certain products, including electric cables and conductive material; in connection with dollar drive, also including certain labor-intensive products such as textiles; 2.4% to 5% of the amount invoiced).

   (b) Manufacturers' tax (refund limited to a few commodities).
   (c) Customs duties on imported goods used in the processing of export products.

Export Financing

1. No program adopted.

2. Government-endorsed program of export financing to be considered by Parliament:
   (a) To be administered by Mediocredito (Central Institute for Medium-Term Credit Financing).
   (b) To have funds of 40 billion lira to finance medium-term credits in connection with special exports.
   (c) Credit operations to consist of discounting of export paper and advancing money against deposit of such paper.

Export Insurance and Guarantees

1. No program adopted.

2. Government-endorsed program to be considered by Parliament:
   (a) To be administered by Instituto Nazionale della Assicurazioni (INA), a public insurance agency.
   (b) Coverage, 75%.
   Premium rates, 1% to 3%.
   (c) Risks to be covered:
      (1) Political - not known.
      (2) Catastrophic (same as France).
      (3) Commercial - not known.
      (4) Economic (blocked accounts, delay of transfer of funds).
      (5) Production losses - not known.
      (6) Price fluctuations - not known.
      (7) Special guarantees - not yet included in present proposal.
   (d) Guarantee ceiling of 60 billion lira for FY 1953-54 and 1954-55 proposed.

SWITZERLAND

Tax Relief

1. No special tax relief is granted to exporters.

Export Financing

1. No special export financing is provided or underwritten by the Government.

Export Insurance and Guarantees

1. Administered by Department for Public Economy and the Federal Office for Industry.

2. Coverage, up to 80%.
   Premium rates, ½%.

3. Risks covered:
   (a) Political (war, revolution, civil unrest).
   (b) Catastrophic - not known.
   (c) Commercial (same as U.K., but application to Government buyers only).
   (d) Economic (blocked accounts, exchange rate changes, changes in clearing fees collected in connection with transactions governed by bilateral trade and payments agreements).
   (e) Production losses (same as U.K.).
   (f) Price fluctuations - not known.
   (g) Special guarantees - not known.

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JAPAN

Tax Relief

1. Exemption from commodity tax (which is computed on the basis of the manufacturing price and ranges from 10% to 50%).

2. No other tax rebates or exemptions known.

Export Financing

1. Administered by the Export-Import Bank of Japan which has a five-year life and may be succeeded by the Japanese Development Bank.

2. Only capital goods exports financed, at interest rates ranging from 4% to 6.5%.

3. Commercial bank participation required; present ratio - 90:10 (75:25 before).

Export Insurance and Guarantees

1. Administered by Export-Import Bank of Japan.

2. Coverage, up to 80% of value.
   Premium rates, 0.48% to 1.0%.

3. Risks covered:
   (a) Political (same as U.K.).
   (b) Catastrophic - not known.
   (c) Commercial (buyer's insolvency or failure to pay within 6 months from due date).
   (d) Economic (same as France).
   (e) Production losses (same as U.K.).
   (f) Price fluctuations (exchange fluctuations as they affect prices).
   (g) Special guarantees - not known.

UNITED STATES

Tax Relief

1. No special tax relief for exports is provided. Exports, as are shipments outside a local area generally, are exempt from sales taxes levied by municipalities or other political subdivisions in the 48 States, Territories and Possessions.

Export Financing

1. Administered by the Export-Import Bank of Washington.

2. Loans and credits are granted to aid in the financing of exports and imports.

3. Credit terms:
   (a) Medium-term.
   (b) Long-term.
   Interest rates vary and are set in relation to prevailing rates for Government obligations.

4. Bank is limited in the exercise of its functions to supplementing and encouraging (i.e. underwriting) commercial credits rather than competing with them.

5. Bank may not have outstanding, at any time, more than $4.5 billion in loans, guarantees, and insurance.

Export Insurance and Guarantees

A - Special insurance under Public Law 30, 83rd Congress:

1. Administered by Export-Import Bank of Washington.

2. Coverage, 100%
   Premium, 0.10% for 30 days. Extension possible. Insurance available as from November 16, 1953.

3. Risks covered:
   Tangible personal property exported from the U.S. in commercial intercourse which is stored in a friendly foreign country and to which the insured has retained title may be insured against
   - damage resulting from hostile or warlike action, including civil war, rebellion, revolution, insurrection;
   - Government confiscation, expropriation or requisition.

4. Insurance authority limited to an aggregate amount of $100 million outstanding at any time; reinsurance for private companies provided.

B - Marine and Air War-Risk Insurance:

1. Administered by Maritime Administration and Defense Air Transport Administration, both agencies of the Department of Commerce.

2. Coverage - Operative if and when similar coverage is withdrawn by private companies following the outbreak of hostilities abroad.

C - Proposed insurance and guarantees - Senate Bill S.849:

1. To be administered by a Foreign Trade Insurance Division of the Export-Import Bank of Washington.

2. Coverage 90% and 100%.
Premium rates to be established.

3. Risks covered:
All-inclusive coverage "to insure or reinsure either directly or in participation with other [private] insurers, payment of moneys due U.S. residents or partnerships or corporations . . . for the export sale of goods (including services and charges related thereto) to such foreign debtors."1/

1/ Senate Bill S.849, Sec. 1.

Section VI

Import restrictions and exchange controls with particular reference to the difficulties they place in the way of United States sales abroad.

SECTION VI

Summary

Quantitative import controls and exchange restrictions, first introduced during the great depression of the nineteen thirties, were continued by most countries after the end of World War II, first to regulate imports to meet reconstruction needs mostly available from the dollar area only and later to conserve gold and hard currency reserves in the face of an apparently persistent "dollar gap." Intra-European trade (outside the Iron Curtain) and Western Europe's trade with some of the wider monetary areas - such as the Sterling Bloc - included in the clearing arrangements of the European Payments Union, by contrast, has been increasingly freed from quantitative trade restrictions.

Imports, especially from dollar sources, are usually planned by foreign countries and import licenses granted on the basis of priority and importance for their economy or the use of imports for processing into goods for export, again with emphasis on export promotion to the dollar area. Import licenses usually carry with them the automatic right to the foreign exchange required for the transaction authorized. They are issued on the basis of broad published regulations usually subject to wide discretionary powers left to licensing officials. It is, therefore, extremely difficult to assess properly the effect of the restrictive practices upon electrical products in particular without the knowledge of specific experience of individual companies whose products may have been denied entry into other countries.

It can be stated, however, that raw materials, foodstuffs and certain industrial products, particularly capital goods, are usually accorded preferential treatment. Consumer goods, especially luxury items, ordinarily are not admitted when the need for hard currency to cover such imports arises and the same products are available from soft currency sources. From this point of view U.S. heavy electrical equipment appears to enjoy a distinct advantage over U.S. electrical household appliances in the light of import controls in effect in other countries. As a matter of fact, tariff benefits and more generous import authorizations have induced American manufacturers of mass-produced items to ship their products in sections and parts and carry out assembly operations abroad.

Relatively free from discriminatory restrictions as to their nature, but not as to quantity are imports from the United States under the British "Import Token Plan" (limited to token quantities) and the export bonus dollar schemes, of importance until recently, of the Netherlands, the Federal Republic of Germany, Denmark, France and others (limited to the amount of bonus dollars available from exports to the dollar area).

Bilateral trade and payments agreements governing much of the trade between Western and Eastern Europe and between Western Europe and Latin America and the Far East have been used as instruments of commercial policy not only to secure needed imports, but also to retain export markets for luxury goods.

TRADE AND CURRENCY RESTRICTIONS AND CONTROLS

Introduction

Until the onset of the great depression of the 'thirties when a number of countries began to experience a rapid loss of foreign exchange reserves and faced acute balance-of-payments difficulties, tariffs were practically the only regulatory instrument available to check a heavy influx of foreign goods.

Following bank failures in Central Europe and termination of the gold standard for the pound sterling in 1931 numerous countries resorted to quantitative import restrictions and exchange controls. National currencies, for the most part, no longer were freely convertible into one another and the volume of imports was formally controlled by the institution of import quotas so as to conserve precariously low foreign exchange reserves.

Quantitative import controls and exchange restrictions, introduced as an expediency to cope with certain external aspects of the depression preceding World War II, were retained by most countries following the end of the war. Indeed, dislocation of production and of world trade accompanied by internal and external financial instability growing out of the upheaval wrought by the war were taken into account in the articles of agreement which provided for the organization and operation of two international agencies, the International Monetary Fund and the General Agreement on Tariffs and Trade. Both documents, the former signed in Bretton Woods in 1944 and the latter in Geneva in 1947, made special provision for a "transitional period" expected to last for the 5-year period 1947-1952 and gave member countries of the Fund and Contracting Parties to GATT the express right to maintain exchange restrictions and import controls if warranted by circumstances for the duration of the transitional period.

The need for capital equipment destroyed by the ravages of war and raw materials required to bring domestic industrial plant back into production as well as acute shortages in foodstuffs and other essentials led the countries of Europe and the Far East to plan imports on the basis of priority. With supplies largely available only from the United States and other countries like Latin America that would not sell but for dollars -- the primary hard currency which had assumed the traditional role of the British pound as a generally recognized medium of exchange -- import and exchange controls were primarily aimed at dollar imports. Initially, however, such controls also sought to regulate the direction of intra-European trade because of the general scarcity of goods available for exports in European markets.

With the advent of the Marshall Plan the European nations banded together within the framework of the Organization for European Economic Cooperation and attempted to solve their problems, with the aid and financial assistance available from the United States, in a joint undertaking. Soon the level of production in most countries approached or even exceeded the prewar level. Once again goods became available for export and the volume of intra-European trade, greatly facilitated by the multilateral clearing system of the European Payments Union established in 1950, reached sizeable proportions.

While European trade was thus revived and individual countries were able to settle trade and service balances satisfactorily via the EPU all member countries, with the exception of Switzerland, continued to run heavy deficits with the dollar area. The loss of traditional sources of supply and markets in Eastern Europe caused by the East-West split and heavy reliance on the United States for capital equipment and other essentials on one hand and loss of earnings from "invisibles" owing to the liquidation of foreign investments and reduced "service" facilities destroyed by the war, such as shipping, on the other, increased the size of the "dollar gap".

In contrast with the progressive liberalization of import restrictions accomplished for much of the intra-European trade, controls on trade and financial transactions with the dollar area, in many instances, were tightened rather than relaxed during the postwar years.

The great majority of countries have introduced a system of import licenses which, in most instances automatically entitles the holder of a license to the necessary foreign exchange. Imports are usually granted on the basis of either a general license or a special license, depending upon the origin and the nature of the proposed imports. While member countries of OEEC retain the licensing procedure for imports originating in other member countries, a high percentage of goods have been "liberalized" (more than 90 percent in the case of the Belgium-Luxembourg Economic Union and Italy) and licenses for their imports are freely granted. Applications for import authorizations covering goods from the dollar area are much more closely scrutinized by the licensing authorities and often require individual approval.

While the policy of licensing dollar imports has varied from country to country and from time to time — depending upon the degree of recovery accomplished and upon developments in a country's balance of payments position vis-a-vis the dollar area — the guiding principles have ordinarily been that licenses would be generally granted if imports were believed essential for the country's economy and could not be obtained from sources other than the dollar area. This would usually include raw materials and foodstuffs as well as certain industrial products, such as capital goods — the latter if their introduction was believed likely to increase the efficiency and/or capacity of production of various economic sectors, or enhance the possibility of cost reduction and greater productivity in connection with concerted export drives, principally aimed at selling in the dollar market. Certain imports, like luxury items, might be banned completely and a wide range of other goods made subject to discretionary approval by the licensing authorities.

Eagerness to sell on the United States and related markets and thus earn dollar exchange induced various governments to offer their exporters an incentive for dollar exports by granting them permission to retain part of the hard currency they earn and use it for the importation of dollar goods which, in many cases, is otherwise prohibited or subject to specific quota limitations.

Another restrictive import device developed by the United Kingdom is the "Import Token Plan" which permits various dollar products not otherwise admissible into the U.K. territory to enter in small quantities considered sufficient to keep them before the British public so as to assure them of interest and a market at some future date when more generous imports may become possible.

In considering products of the electrical industry a basic differentiation was made between imports of heavy electrical equipment, such as generators, turbines, transformers which belong to the category of capital goods and durable consumer goods like electric home appliances. The former were needed for the reconstruction of war-damaged power stations and industrial plant or for the construction of new power projects designed to increase the productive capacity in countries already industrialized or still underdeveloped. Home appliances such as refrigerators, radio and television sets, on the other hand, were often considered luxury items and thus denied the classification of essentiality assigned to imports of the heavy types of electrical equipment. Other electric motors and apparatus are traditionally manufactured in nearly all industrialized countries and, as imports, were treated as belonging to a third or intermediate category considered important only to the extent that their import was necessary to make up early postwar or other temporary deficiencies in home production to meet domestic requirements.

Heavy electrical equipment: As part of the general reconstruction effort in Europe a comprehensive electric power program was developed by a special committee of OEEC which, undoubtedly, also took into account electric power needs studied by another group under the sponsorship of the United Nations Economic Commission for Europe. Imports of heavy electrical equipment, for the most part, had to come from the United States, the industrial plant of which not only had suffered no war damage, but also had been expanded greatly in connection with the war effort; from Switzerland where industrial capacity also had been spared damages; and, to a smaller extent, from the United Kingdom where initial export availabilities were curtailed by the need for internal reconstruction. Although these suppliers were thus located mostly in the hard currency area the governments of importing countries needed to be little concerned with furnishing foreign exchange because such shipments were financed from dollar aid granted by the United States under the European Recovery Program.

Aside from the reconstruction angle so relevant during the initial postwar years, industrial expansion to meet growing population pressures generally and industrial development in the underdeveloped countries specifically had an important bearing on the demand for capital goods, including heavy electrical machinery. Many electric power projects throughout the world were financed by long-term loans granted by the International Bank for Reconstruction and Development after the Bank's special missions had studied the desirability and soundness of the projects abroad and the Bank's board of directors had given its approval, with the Bank making funds available for purchases abroad in the currency or currencies needed. With power projects financed in all parts of the world, especially in Latin America, Africa, the Near, Middle and Far East, American industry enjoyed an overwhelming share in providing the equipment needed. Similarly, in recent years, the Export-Import Bank, often in conjunction with loans granted by the IBRD, extended credit facilities having a more intermediate term character for the purchase of equipment in the United States. For all equipment imports financed by either of the two institutions there was little need for the application of import controls in the various countries because of the availability of dollar and other exchange.

Finally, even imports of electrical equipment requiring payment in hard currencies, i.e. mostly dollars, on a strictly commercial basis were given some kind of preferential treatment or special consideration in

connection with the granting of import licenses and allocation of foreign exchange because of the beneficial nature of these types of capital equipment for economic recovery and expansion. As a matter of fact, in many instances internal domestic power projects and other projects designed to enlarge productive capacities would require prior government sanction before they could be undertaken. Such sanction once given would carry with it approval for the importation of necessary equipment and provision for foreign exchange.

While, therefore, imports of heavy electrical equipment under the various forms of financial arrangements were relatively free from the strict applications of existing broad import restrictions throughout the earlier postwar years, American producers who were able to furnish the greatest part of the equipment until recently are now facing increasing competition on the part of German, British and other manufacturers who have made a strong comeback and even begun to compete in the U.S. market.

During the early postwar period a number of Latin American countries, desirous of speeding industrial development, used a substantial part of their dollar holdings accumulated as a result of deliveries of basic commodities to the United States during the war years for the purchase of capital equipment, including electrical equipment. These commercially financed transactions together with the unusually large importation of "luxury" goods, such as automobiles, refrigerators and a wide range of other dollar goods, quickly depleted the countries' dollar reserves and led them to curtail dollar imports, except for essentials like fuel. A similar development occurred again when these very same countries earned large amounts of dollar exchange as a result of heavy deliveries of raw materials following the outbreak of the conflict in Korea when the United States was engaged in a huge stockpiling program and a steep rise in world market prices for basic commodities greatly favored the terms of trade for the exporting countries. Later consequences were also similar. Such instances of acute dollar crises were reflected in special credit arrangements negotiated between Argentina and the Export-Import Bank of Washington in 1949 ($125 million) and between Brazil and the Bank in 1953 ($300 million) for the purpose of clearing up outstanding dollar payments due for imports and other transactions on "current" account with the United States.

Electrical appliances: In contrast with heavy electrical equipment dollar imports of electrical appliances had to face a much greater hurdle of restrictions and controls. These items were not given the same kind of priority consideration from the balance-of-payments point of view that was accorded heavy equipment. A number of countries encouraged the establishment of new or expansion of existing assembly operations within their borders by admitting parts at more favorable tariff rates than fully-assembled appliances, and even denied import licenses in some instances outright. Such government policy, of course, was dictated by a desire to create employment opportunities domestically for the growing labor force which continually had to be absorbed by the economy in such population surplus countries as the Netherlands, Belgium and Italy. Finally, the desire to protect domestic industry in the electrical field led to the strict application of import restrictions to foreign goods. While such exclusion of foreign goods was mostly handled on the "administrative level" (i.e. left to the discretionary powers of licensing officials), a few instances can be cited where regulations specifically limited the importation of individual electrical products or even electrical goods generally. Belgium

restricted the importation of electronic tubes admittedly for other than balance-of-payments reasons.1/ The United Kingdom, after running sizeable deficits with other OEEC countries, rescinded a long list of products previously included in the OEEC trade liberalization program and reimposed quantitative restrictions by establishing global import quotas (which, incidentally, were thus no longer discriminatory against dollar imports) in a series of three steps taken between November 1951 and March 1952. The last of the steps also covered the entire range of electrical goods.2/ Although some of these restrictions were subsequently lifted as the position of the United Kingdom in EPU improved later in 1952 electrical goods apparently were not restored to their original "liberalized" position, possibly as a result of strong pressure brought about by British industry which in 1952 began to experience the return of a buyers' market in the electrical appliance and even electric motor fields at home and abroad.

While this study is primarily concerned with the effect of foreign import and exchange controls upon the electrical industry in the United States, the experience of certain foreign competitors in third markets may be cited as an indication that, in many instances, such markets are not closed to dollar goods alone. Thus the Netherlands firm Philips reported that, in 1952, "...international trade policies...adversely influenced exports..." The company's products "were worst affected by...restrictions in overseas countries..." "Trade and currency controls continue to affect...exports in 1953..." 3/ Similarly, preferential treatment accorded to imports of unassembled parts does not apply to American products exclusively. Because "import restrictions make the export of complete receivers hazardous and unpredictable..." the British radio industry meets "quota restrictions in otherwise promising markets like South Africa...by exporting the chassis only, leaving the importer to fit it into a locally-built cabinet." 4/

Bilateral trade and payments agreements, first negotiated extensively during the prewar depression and based on a strictly quid pro quo barter principle, have governed much of the foreign trade of foreign countries during the postwar period. Although, with improvements in the payments mechanism, the pressure for bilateral balancing has eased, "the agreements are still playing an important role in the commercial policies of the European countries." 5/ Because they are considered essential not only to secure needed imports, but also to sell luxury goods 5/ even a country like Switzerland which otherwise imposes relatively few import restrictions relies upon this device to a considerable extent. Moreover, "trade between East and West European countries is basically 'bilateral' in character." 5/ Thus the largest German manufacturer of electrical goods, Siemens, has stressed the difficulties which result from delivery of capital equipment - in the nature of long-term transactions - in the light of short-term bilateral trade and payments agreements. 6/

1/ GATT: International Trade 1952, p. 82.
2/ Ibid., pp. 67/68.
3/ N.V. Philips' Gloeilampenfabrieken; Annual Report for 1952. p. 16.
4/ The (London) Economist, Sept. 5, 1953, p. 658.
5/ GATT: op. cit., p. 88.
6/ "Weiterer Kraeftezuwachs bei Siemens" in Der Volkswirt, April 18, 1953, p. 26.

Country Summaries

1. United Kingdom
2. France
3. Federal Republic of Germany
4. The Netherlands
5. Belgium-Luxembourg Economic Union (B.L.E.U.)
6. Sweden
7. Italy
8. Japan

UNITED KINGDOM

The Exchange Control Act of 1947 in effect continued the exchange and trade control system introduced in the United Kingdom on September 3, 1939. The administration of exchange control is entrusted to the Bank of England which acts in behalf of the U.K. Treasury, with certain authority for approving normal payments delegated to commercial banks. Import and export licensing - the latter not related to exchange control, but to other considerations such as the strategic nature of the goods to be exported - are in the hands of the Board of Trade.

Sizeable imports on government account - mostly foodstuffs and raw materials - are not subject to import licensing, but imports on private account are subject to one of the following types of license: World Open General License, Open General License, Open Individual License, or Individual Import License.

The use of the World Open General License is necessarily not great because it permits any person to import selected commodities from any source without limit of quantity. A considerably wider range of goods may be imported on Open General License which permits unrestricted imports from so-called "soft currency" countries. Thus imports from countries belonging to the European Payments Union and a few other non-sterling non-dollar countries are admitted generally on the basis of Open General License or quantitative "global" (area) quotas. The latter type of licensing, on the whole, is non-discriminatory as to individual countries belonging to a given area and has been more widely used since the United Kingdom, following a deterioration of its position in EPU reimposed import restrictions late in 1951 on certain goods already liberalized under the OEEC trade liberalization program.

The Open Individual License is a variation of the Open General License and is issued to individual traders who are permitted to import without limitation of quantity, but subject to the observance of conditions such as compliance with internal distribution controls. Finally, the Individual Import License is mainly reserved for imports from the dollar area and certain other countries. It enables licensing officials to pass on each individual transaction.

In the overall programming of imports a broad distinction is made between imports from hard-currency and from soft-currency sources of supply. For the former, detailed import schedules for individual commodities have been carefully drawn up annually and reviewed semi-annually since 1948. Such schedules take into account imports on private as well as government account and are arrived at in the light of total import requirements, availabilities from other sources and current balance-of-payments considerations vis-a-vis the dollar area. Of course, in instances where the United Kingdom has concluded bilateral trade and payments agreements with other countries, individual licenses are required and import allocations for goods originating in such other countries are reviewed periodically in consultation with the countries concerned.

Individual licensing, in some instances, may also be determined by the end-use to which imported goods will be put. This applies to dyestuffs and, of particular interest to the electric industry, certain types of machinery.

The United Kingdom, the Dominions, dependent overseas territories and certain other countries, originally called the "Sterling Area", are now designated the Scheduled Territories. Trade and exchange controls of the group are closely coordinated and maintained for the avowed purpose of conserving gold and hard-currency reserves and achieving the best possible balance-of-payments position on an overall basis, with a common currency pool centrally administered in London. The pool also serves as the clearing house for the monthly settlement with EPU which the United Kingdom undertakes in its own behalf and in behalf of its associated territories.

Subject to the submission of evidence of importation, or, where this has not yet taken place, the relevant import license, foreign exchange is automatically granted. Commercial credits may also be opened to take care of shipments to or from the United Kingdom. Except where no transfer of funds outside the Scheduled Territories is involved, such credit accommodations require the approval of the exchange control authorities. Credits ordinarily should not exceed 9 months duration and provide for drawing at sight or up to 90 days. Import licenses must be held and valid for the period of the credit. The license period, under exceptional circumstances, may be granted for periods longer than 9 months.

The Bank of England usually provides foreign exchange cover against commitments payable in a foreign currency for freight charges incurred or to be incurred in connection with specific shipments of goods upon submission of documentary proof of a firm contract. U.K. residents also may obtain foreign exchange to cover other approved transactions, such as agents' commissions, royalties, insurance premiums and claims, income from investments, including profits on companies controlled or partially controlled abroad. A free foreign exchange market for approved spot transactions operates within specified limits (in the case of the U.S. dollar, 2.78 selling and 2.82 buying as compared with the official par value of 2.80). Forward exchange transactions covering firm commercial contracts involving a movement of goods also are permitted. Dealings are carried on by authorized banks. Specified currencies, particularly the U.S. and Canadian dollar, Swiss franc, Belgian and French franc, Netherlands guilder, acquired by residents of the United Kingdom must be offered for sale to the Treasury through authorized banks.

FRANCE

The French trade and exchange control system, first introduced on September 9, 1939, was generally overhauled and codified in July, 1947. A decree dated July 13, 1949, regulated the issuance of import licenses, but import restrictions were subsequently modified on several occasions, particularly in February 1952 when France, after having "liberalized" as much as 75 percent of its trade with OEEC countries, reimposed strict controls upon transactions with that area. At the present time, therefore, practically all imports require the granting of a license.

The French Minister of Finance is granted extensive overall authority in the field of exchange and trade control. Import licenses are issued by the Service Central des Licenses (Central Licensing Service) and approved by the Office des Changes (Exchange Office). Licenses are valid for 6 months and automatically entitle the beneficiary to acquire the necessary foreign exchange from an "approved" bank. If the importer expects delivery of goods ordered from abroad to require more time than is provided for by the import license (i.e. a maximum of 6 months), he applies for a special advance authorization designed for such a situation ("authorisation prealable").

For imports from countries with which France has no commercial agreements containing quota lists of products to be exchanged, licenses are issued within the limits of allocations governed by an official import program drawn up annually. Licenses for imports under bilateral agreements with other countries are issued within the limits of the quotas fixed, but not necessarily to the full amount of the quotas if the foreign exchange available is inadequate. Trade with the dollar countries is not subject to commercial agreements; trade with the OEEC area during the past year has been largely determined by bilateral understandings reached between France and its European trading partners.

The import of certain products - mainly industrial raw materials (solid fuels, petroleum products, electric power), certain agricultural commodities and various finished products - on private account will not be licensed by the French authorities. This trade is reserved to "groupements d'importation", privileged enterprises sometimes working closely with state monopolies. These "groupements" were set up after the war when a joint effort in making purchases of scarce goods abroad were adjudged necessary.

No individual import license may be required in the case of specified equipment goods, raw materials, and semifinished products for export-producing industries imported under the so-called "10 percent equipment" arrangement, or imports, unless absolutely prohibited, paid for with proceeds from prior exports to the dollar area and a few other countries.

Export proceeds generally must be collected within 90 days from arrival of the goods at the point of destination and surrendered, through an "approved" bank at free-market rates (in the case of currencies quoted

on the free market such as the U.S. and Canadian dollar, Belgian and Swiss franc, etc.) and at the official-market rates for other currencies. Exempt from the surrender requirements are 15 percent of proceeds from exports to any country payable in U.S. or Canadian dollar, Djibouti francs, or francs from a so-called "free franc account" (plus exports to Mexico, Peru and Cuba for which payment is made in prescribed form) and 10 percent of proceeds from exports paid for in any other manner. Retention of proceeds from exports on consignment is limited to 6 percent. All proceeds retained are kept in so-called EFAC accounts (Accessory Charges Export Accounts) and may be used only by the account holder for a wide range of transactions, subject to individual licensing. One-fifth of the proceeds retained under the 15-percent provision, however, may be used by exporters for any payment abroad including payment for any imports except those absolutely prohibited.1/ "Invisibles" related to trade transactions, such as freight charges, insurance, commissions, foreign advertising, etc. are allowed freely where the basic trade transaction has been approved. Business profits and dividends as well as royalties may be remitted abroad, subject to supervision by the Exchange Office.

Trade and exchange controls are administered uniformly throughout the French Franc Area which comprises, in addition to Metropolitan France, Monaco, the territory of the Saar, French Overseas Departments and Protectorates as well as the Associated States of Cambodia, Laos and Vietnam in the Far East. Most payments agreements relate to settlements between the French Franc Area as a whole and the other countries concerned, except that specific provisions may apply to trade between the recently independent states of Indochina and other countries. The foreign exchange reserves of the French Franc Area are managed centrally in Paris (similar to the administration of the foreign exchange pool of the Scheduled Territories which is in the hands of London). During 1952 the rate on the "free market" for authorized transactions in U.S. dollars fluctuated between 349.50 and 350 francs. Since January 1948 France has maintained no official par value for the franc under terms of the Articles of Agreement of the International Monetary Fund.

1/ Effective November 1, 1953, the use of these funds for virtually unrestricted purchases abroad has been eliminated. Henceforth, imports paid out of the full 15-percent EFAC accounts must be essential goods, such as raw materials and equipment goods, used directly by the exporter himself for his principal operations. Such imports, moreover, may not be resold in the same form "even if they are in relation to the importing concern's direct business activity." (Journal of Commerce, September 29, 1953.) In addition, after January 10, 1954, and in quarterly intervals thereafter, 10 percent of EFAC account balances on hand at the close of the calendar quarter immediately preceding must be repatriated. (Ibid.; see also "France Restricts Use of EFAC Accounts" in Foreign Commerce Weekly, October 12, 1953, p. 5.)

FEDERAL REPUBLIC OF GERMANY

Exchange and trade controls, first introduced by Germany on July 15, 1931, were continued after 1945. The joint Export-Import Agency, operating in the Western Occupation Zones of Germany under Military Government Law No. 53 of May 28, 1945, and in Berlin under Ordinance No. 337 of August 21, 1946, exercised an exclusive import monopoly in the early postwar years which was abolished in February 1949. Since then German traders have again been able to handle foreign imports which, however, must conform with the basic provisions of Foreign Trade Circular No. 56/51 of December 15, 1951, establishing the present licensing procedure effective January 1, 1952.

This procedure requires the issuance of a "purchase authorization" before the importer is able to conclude a valid purchase contract abroad. The authorization generally expires after four weeks and is a binding promise for an import and payment license provided the purchase contract is concluded in accordance with general import regulations and the specific terms of the purchase authorization. Purchase authorizations are granted on the basis of published "import possibilities", of "free lists" permitting quantitatively unrestricted imports from OEEC countries and associated territories (as of April 30, 1953, 90 percent of OEEC imports were liberalized), and of imports permitted in connection with special exchange allocations available under the "import rights" system or from "foreign exchange working funds" (discussed below). Purchase authorizations are issued either by the Land Central Banks in the individual Laender (states) of the Federal Republic ("under the bank procedure") or a Federal agency (under the "Federal authorities procedure" or the "LV procedure" for the rapid handling of perishable food products). The Bank deutscher Laender, Germany's National Central Bank, acts as the ultimate reviewing agency in the case of the "bank procedure" (under which imports of consumer goods are generally carried on) and is notified by the local authorized bank which originally received an importer's application for a purchase authorization, through a Land Central Bank, of the amount of the application. If the total amount of all applications exceeds the amount available in accordance with "import possibilities" previously announced for a given period, foreign exchange is allotted on a pro-rata basis.

Application for an import license - as distinct from an application for a purchase authorization - which is issued exclusively by the Land Central Banks must be made immediately following the conclusion of a purchase contract. The license is usually valid for a period of up to 30 days beyond the specified delivery date and immediately permits an authorized bank to effect the foreign exchange payment approved. Licenses for goods on the "free list" applying to imports from OEEC countries are issued upon presentation of a certificate of origin by the importer.

While all foreign exchange earned from visible or invisible exports must be surrendered, "import rights accounts" are granted for 40 percent of gross proceeds in freely convertible currencies (U.S. dollars and free Swiss francs) from exports of domestically produced goods. Because

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they are transferable and may be used for specified imports from the dollar area - the list of specified imports, first limited to 90 items in April 1952, was expanded to 400 items in July 1952 - import rights have commanded a premium; this premium, however, has steadily declined from about 20 percent when the system was first instituted to 5 percent in December 1952 and to as little as 1 percent in the early months of 1953.

Four percent of all proceeds from domestically produced exports that are not freely convertible are credited to "foreign exchange working fund accounts". Similarly, 4 percent of freely convertible currency receipts may also be retained under this procedure; this is accomplished by the transfer of 10 percent of import rights accounts to foreign exchange working fund accounts. The latter type of account is, in principle, not transferable and is to be used by the firm which carries the account and within a specified period of time for the importation of raw materials and semi-finished products essential to export production. Moreover, credits obtained abroad to cover imports of raw materials for the manufacture of certain exports may be repaid from such export proceeds.

In accordance with a revision of rules governing the use of foreign exchange working fund accounts in July 1952, 20 percent of the funds credited to such accounts may be used for the importation of machinery or materials for increasing productive capacity not directly concerned with the processing of export goods. Provided a permit is obtained from State authorities (for imports below DM 2,000) or Federal authorities (for imports above DM 2,000) no "purchase authorization" is required.

In connection with imports commercial credits may not be opened earlier than 60 days before the expected shipment of the merchandise. Forward exchange operations in certain currencies, including U.S. dollars, are permitted for duly licensed imports up to a term of three months. Extension for a similar period may be granted.

Accounts in foreign currencies are not permitted for non-resident individuals or firms; blocked accounts expressed in local currency can be used within Germany for investment purposes only, but may be transferred to other non-resident account holders and thus are salable in New York and elsewhere.

Transfer authorization for trade-connected service expenditures such as freight, insurance, agents' commissions, advertising promotion, is usually granted. Remittances abroad covering royalties are subject to special licenses. Certain exports - mostly of strategic commodities - require a license granted by the Federal Office for Merchandise Trade.

THE NETHERLANDS

The system of trade and exchange controls, originally introduced in the Netherlands on May 10, 1940, has its present legal basis in the Foreign Exchange Decree of 1945. While the basic structure of the system has remained unchanged, considerable relaxation in its detailed application has been experienced since.

The administration of exchange control is handled by the Netherlands Bank on behalf of several interested ministries, that of import and export licensing by the Central Import-Export Agency (CDIU) under the directives of the Directorate-General for Foreign Economic Relations. The Netherlands Bank also licenses all invisible and capital transactions as well as those incidental to transit trade, the latter being considerable in view of the heavy volume handled by the port of Rotterdam.

State trading, going back to 1930 when stabilizing prices of farm products was the principal aim, is still in force for certain grains and feedstuffs, among other things. 82 percent of imports from OEEC countries on private account were freed from quantitative restrictions as of April 30, 1953. While such imports generally continue to require licenses (which, however, are automatically granted), a large variety of goods in consignments of 400 guilders or less do not require any license at all. Imports from the Belgium-Luxembourg Economic Union (B.L.E.U.), on the basis of mutually applicable agreements and in line with the objective of achieving ultimately complete economic union of the Benelux countries, have been freed from quantitative control to the extent of about 95 percent. Trade in "non-liberalized" goods with the OEEC countries as well as all trade with Eastern European, Latin American, and certain other countries is governed by bilateral trade and payments agreements. While the size of import quotas provided for in such agreements is generally determined by the availability of currencies needed for payment, it often is enough to permit, in fact, unlimited imports.

An import program from the dollar area is drawn up annually. Goods included in the past were those not readily available elsewhere at the required quality and price. With the substantial improvement in the Netherlands reserves of gold and hard currency accomplished since mid-1951, however, the Netherlands Government was able to announce a relaxation of restrictions on imports from the dollar area in 1953. The Netherlands Minister in Washington even went so far as to declare that his country would "throw its foreign trade doors wide open to imports from the United States provided (the latter) ... erected no new tariff barriers against Dutch exports" or quantitative import restrictions against agricultural products as was the case in recent years. 1/ In order to stimulate Netherlands exports to the dollar area, 10 percent of all proceeds in U.S. and Canadian dollars from exports of domestic goods to countries with which no specific payment agreement have been concluded may be retained and used for imports from any country payable in dollars that otherwise are restricted. Import

1/ The New York Times, October 7, 1953, pp. 43, 46.

and exchange licenses for bonus dollar imports are automatically granted on application. In exceptional cases, however, they may be refused on grounds of commercial policy. The premium for export bonus dollars has largely disappeared as it did in the case of German import rights.1/ Such dollars originally quoted at about 9 guilders subsequently became available at rates not much above the official rate of 3.80 guilders for the dollar. With Netherlands gold and dollar reserves at a very satisfactory level, the discontinuation of the export bonus dollar system was announced effective October 19, 1953.2/ Other countries practicing similar systems announced that they would follow suit.

Except for the amounts retained under the export bonus dollar provision export proceeds generally must be surrendered at the official rate. Free spot and forward exchange markets have been established for a number of currencies, including the U.S. dollar. Forward transactions must be based on authorized merchandise or service transactions. Prepayment for goods prior to their dispatch to the Netherlands is prohibited if U.S. dollars, Canadian dollars, or free Swiss francs are involved.

1/ Cf. summary for the Federal Republic of Germany.
2/ Journal of Commerce, October 20, 1953.

BELGIUM-LUXEMBOURG ECONOMIC UNION (B. L. E. U.)

Trade and exchange restrictions were first introduced in Belgium on May 10, 1940. During the war years restrictions were applied separately in Belgium and Luxembourg. Since 1944-45, however, when the Belgium-Luxembourg Economic Union established a single control authority Luxembourg has introduced the same controls applied by Belgium. Responsibility for the administration of exchange control rests with the Institut Belgo-Luxembourgeois du Change (Belgium-Luxembourg Exchange Institute), that for trade control with an intergovernmental Belgium-Luxembourg commission. In many instances authority for payments and transfers is delegated to authorized banks.

Until several new restrictive measures were introduced in September 1951 B.L.E.U.'s exchange control system had been considered fairly liberal. These measures represented an effort, on one hand, to limit payments in hard currencies for imports and services wherever possible and thereby to reduce a persistent deficit with the dollar area and, on the other hand, to increase imports from OEEC countries and thus to facilitate the reduction of a heavy surplus with that area. Except for certain raw materials and other goods not otherwise available from the soft currency countries, dollar imports either were forbidden outright or, by administrative decision, sharply curtailed. At the same time, a part of the proceeds from exports to OEEC countries was made subject to withholding for a period of 6 months. Funds resulting from the withholding procedure helped B.L.E.U. finance part of the large credit it was obliged to extend to EPU because of its surplus accumulation in the Union. For the purpose of discouraging exports to OEEC countries an export tax, first levied on all exports, was soon limited to exports to the OEEC area.

B.L.E.U. is now back to basically more liberal controls. Following the accusation by the United States at the Seventh Session of GATT in Geneva in the fall of 1952 of discriminatory practices against the dollar area - it was no longer claiming the benefits of a special provision in GATT permitting continued discriminatory import restriction in the case of balance-of-payments difficulties - B.L.E.U. relaxed dollar import restrictions on two occasions during the early part of 1953. Moreover, because monthly surpluses with EPU disappeared largely toward the end of 1952 B.L.E.U. discontinued the practice of withholding part of the proceeds from exports to OEEC countries.

Most imports into B.L.E.U. are free of specific import license requirements, but an import "declaration" must be made. The intergovernmental Belgium-Luxembourg commission supervising all trade controls publishes, from time to time, revisions to the list of goods requiring specific import licenses. (The procedure regarding exports is quite similar, with "declarations" or specific licenses required.) Import declarations and licenses must be stamped by authorized banks before exchange can be made available and actual importation may take place. A very high percentage of imports from OEEC countries and associated areas have been "liberalized",

as has 95 percent of the trade with the Netherlands within the framework of special Benelux arrangements designed to lead to ultimate economic union between B.L.E.U. and the Netherlands. OEEC trade not yet "liberalized" as well as trade governed by bilateral payments and trade agreements (particularly with Eastern Europe) is scrutinized by the Exchange Institute and the licensing authority. Notwithstanding relaxation of import restrictions from the dollar area earlier this year, certain dollar goods, although only subject to "declaration licenses", still require approval of the central exchange control authority before an individual bank affixes its stamp.

Permission for normal invisible payments is granted, subject to general review by the Exchange Institute.

Except for currencies of EPU member countries the Belgian and Luxembourg exporter must surrender the proceeds from foreign transactions to his banker within 8 days. But even the currencies which the exporter may freely retain ordinarily cannot be disposed of without a license. Belgium maintains a free market for a number of currencies. The currencies of EPU countries are negotiated in the free market at fluctuating rates, but the use of exchange thus acquired is limited to a few invisible transactions. There is a free market for spot and forward dollar; forward exchange contracts may be concluded for a period of up to 6 months and renewed or extended upon proper justification.

SWEDEN

Exchange and trade controls, based on a law passed in 1939, were first introduced on February 25, 1940. Restrictions were more or less discontinued after the war. In March 1947, however, deterioration in the Swedish balance of payments made a reintroduction of a comprehensive system of controls necessary. This system of controls experienced its last major revision on June 17, 1949, with payments in connection with intra-European trade and services considerably relaxed since.

Import as well as export licenses are issued by the State Trade and Industrial Commission (except for fuel imports under the jurisdiction of the State Fuel Commission and agricultural products under the jurisdiction of the State Commission of Agriculture). Imports payable in U.S. dollars or other hard currencies are mostly limited to goods considered essential to the Swedish economy. Payments and transfers abroad must be made through the Sveriges Riksbank, the Swedish National Bank, or through one of 16 designated banks and require the approval of the Exchange Control Office which, however, has delegated much of its authority to the individual banks.

Licenses are required for all imports which are not the subject of trade liberalization or included in the Swedish free import list. Such licenses are granted either on the basis of quotas in the case of bilateral trade and payments agreements or, as in the case of dollar area countries, within limits governed by a Swedish import plan or current availabilities. While restrictions are considered necessary, the application of such restrictions is guided by a desire to preserve traditional import patterns. Thus importers are permitted to choose among products as long as they stay within the amounts of foreign exchange allocated to various branches of trade; the most recent base period practicable is usually selected for purposes of reference.

Whenever an import license is obtained, or if no license is required at all, payment may be effected without delay, subject to production of evidence of dispatch of the goods to Sweden and conformity with general rules applicable to the method of payment. Also payments for most current invisible items are freely permitted through authorized banks. Payment for imports prior to actual shipment is allowed in some instances. Forward operations are permitted in U.S. dollars and pounds sterling.

The import of a number of agricultural products is centralized in the hands of State monopolies. Effective November 1, 1952, 92 percent of trade with OEEC countries was freed of quantitative import restrictions. This liberalization was extended to include other member areas of EPU, such as the sterling area, Finland, Portugal and Indonesia.

Most exports to the Western Hemisphere (except Argentina) and to all OEEC countries are free from licensing requirements. Payment for such exports, however, must be made within 6 months and all hard currency

exchange resulting from these transactions must be surrendered. While this surrender obligation does not apply to other currencies, such other foreign exchange can be used by the holder only upon authorization or may be sold against Swedish kroner at the official rate of exchange.

ITALY

Controls on international transactions were first introduced by Italy on September 29, 1931, but were not established on a more systematic basis until 1934 when the compulsory surrender of all foreign exchange and foreign assets was decreed. Restrictions of imports when believed necessary were first authorized by a law passed in 1926. This law was implemented by regulations adopted in 1935. In 1939 imports without license were prohibited, as were exports in 1940. The system of controls was last revised on September 19, 1949.

The Italian exchange control system is operated by the Ufficio Italiano dei Cambi (Italian Exchange Office) on the basis of instructions issued by the Ministry of Foreign Trade. Import licenses when required are granted by the Ministry of Foreign Trade; some goods may be imported with the direct authorization of the customs authorities. Import licenses usually are valid for a period of 4 months. All purchases and sales of exchange, including those negotiated on the "free" market, pass through designated banks. Foreign exchange acquired in connection with exports and other transactions must be surrendered to the Exchange Office through the designated banks. In the case of U.S. dollars, Canadian dollars, and freely transferable Swiss francs, 50 percent of the exchange receipts are credited to a special account in favor of the recipient who may retain these funds for a period of 60 days. During this period the funds may be disposed of in any one of the following manners: (1) by making authorized payments; (2) by selling on the free market (where their use is restricted to imports or authorized payments abroad by the buyer of the exchange); or (3) by selling to the Exchange Office.

Since 1948 Italy has progressively relaxed quantitative restrictions on imports from soft-currency countries. Except for some 16 tariff items, all such restrictions have been suspended on imports for which payment is made through EPU (OEEC countries and associated areas, the sterling area, Indonesia). In order to encourage additional imports from EPU member countries Italy even went so far as to provide for temporary arrangements which permitted Italian importers to borrow EPU currencies at specially reduced interest rates. Also import duties with regard to goods originating in those countries were temporarily reduced by 10 percent. Other imports from countries with which Italy has concluded special agreements (with payments affected outside of EPU) are limited in accordance with quota provisions contained in such agreements. However, even in these cases additional imports may be permitted within certain limits. Because of the country's extent of trade liberalization its balance-of-payments position vis-a-vis the EPU member countries greatly deteriorated when France and the United Kingdom "deliberalized" OEEC imports in 1951-52.

Imports privately arranged on a barter basis with countries which are not signatories to payments agreements or otherwise do not permit settlement in dollars require individual authorization.

Import policy concerning goods originating in the dollar area is aimed at limiting such imports to the availability of dollars. Free importation of certain products from dollar countries is authorized, however, and raw materials and essential products generally are given priority in licensing considerations.

While importers of dollar goods are authorized to acquire dollar exchange for payment either in the "free" market at the market rate or from the Exchange Office at the official rate, steadiness of the market rate achieved in 1952 makes the source of dollar exchange unimportant.

Italian State trading is confined to a monopoly of imports of tobacco, wheat, bananas, quinine, phosphorus and phosphorus sulfide, matches and cigarette lighters. In the public interest the Government may also handle importing in bulk, an authority exercised in the past in the case of certain raw materials such as tin, various mineral products, and vegetable oils. As the supply position improved state imports have shown a gradual drop from 23 percent of total imports in 1948 to only 7 percent in 1950.

Certain commodities included in a special list (Tabella Esport) require export licenses; such requirement is waived in some instances if payment is received in a hard currency. In order to promote dollar exports the Italian Government provides special credit facilities and grants specified rebates of the turnover tax on a few commodities.

Payments abroad for invisibles require licenses which are issued by the Exchange Office. Foreign exchange is freely granted for expenses incidental to trade transactions. There are no forward operations at the official rate which is fixed daily by the Exchange Office and corresponds to the average of the closing rates on the Milan and Rome exchanges on the same day.

JAPAN

Exchange controls, originally introduced in Japan on July 1, 1932, in order to prevent a flight of capital, were increased on January 8, 1937, and subsequently made still more stringent. After the war the Supreme Commander for the Allied Powers (SCAP) exercised strict control over trade and exchange transactions until an entirely revised foreign trade and exchange control law was put into effect on December 1, 1949. As of that date the Japanese Government took over the control of export trade; on January 1, 1950, it also assumed the responsibility for the control of import trade and "invisible" transactions.

On the policy level, a Ministerial Council plans the exchange budgets that govern many of the authorized imports. Such imports are communicated to foreign traders through "import announcements". Exchange and trade control policy is carried out by the Ministry of International Trade and Industry in regard to merchandise transactions and by the Ministry of Finance (through its Foreign Exchange Bureau and Foreign Exchange Council) in regard to all non-merchandise transactions. Finally, on the technical level, the Bank of Japan and certain authorized banks are entrusted with the administration of the controls.

Practically all imports are subject to individual import licensing and registration. Licenses for imports covered by "import announcements" are issued by authorized banks, while licensing of other imports is handled by the Ministry of International Trade and Industry. Import licenses are granted rather freely for specific commodities, such as foodstuffs, basic raw materials, and specified machinery and equipment. The Ministry of International Trade and Industry also has jurisdiction over the granting of licenses if the proposed payment is not in accordance with methods of settlement prescribed for the territory related to the transaction, i.e. if it is not to be effected in pounds sterling for the Sterling Area; U.S. "accounting" dollars with so-called "open-account" countries (settlement through accounts established in accordance with individual payments agreements); or U.S. dollars in respect to all other countries and monetary areas.

According to regulations issued in July 1952 importers were forbidden to import coal and raw cotton from the dollar area unless, under a "linked system", such imports were combined with a certain percentage of imports of the same commodities from the Sterling Area and/or "Open Account Area".

While certain imports from the dollar area are thus subject to stricter controls than imports from other areas, exports to the dollar area are given special incentives. Whereas all export proceeds have to be surrendered within 10 days from the date of acquisition or repatriation, a percentage of dollar proceeds from specified exports (other than "accounting" dollars) - ranging from 5 to 15 percent - may be used by the recipient of the proceeds for the purpose of foreign trade promotion (travel abroad) and importation (including related incidental costs) of commodities required for export processing and/or economic recovery.

Payments covering incidental costs in respect of authorized imports and exports and specified categories of transfers - in connection with insurance, shipping, etc. - are freely permitted.

All exports are subject to registration with an authorized bank or, in the case of strategic commodities or commodities in short supply, require licenses from one or more Ministries. Approval by authorized banks makes full payment or the establishment of an irrevocable letter of credit a prerequisite.

Note:

The summaries are based primarily on the following source material:

- The National City Bank of New York: Summary of Exchange and Foreign Trade Regulations as of January 1, 1953, together with supplementary information contained in issues of Customers Confidential Bulletin irregularly published during 1953. (U.K., pp. 83-98; France, pp. 56-68; Germany, pp. 68-69; Netherlands, pp. 138-139; B.L.E.U., pp. 48-51; Sweden, pp. 82-83; Italy, pp. 73-78; Japan, pp. 122-124.)
- International Monetary Fund: Exchange Restrictions, Third Annual Report (1952). (U.K., pp. 159-164; France, pp. 93-98; Germany, pp. 162-171; Netherlands, pp. 123-125; B.L.E.U., pp. 38-46; Sweden, pp. 144-145; Italy, pp. 118-120; Japan, pp. 213-215.)
- International Monetary Fund: Exchange Restrictions, Fourth Annual Report (1953). (U.K., pp. 286-293; France, pp. 152-161; Germany, pp. 199-201; Netherlands, pp. 223-235; B.L.E.U., pp. 63-72; Sweden, pp. 264-267; Italy, pp. 204-209; Japan, pp. 210-215.)
- General Agreement on Tariffs and Trade (GATT) The Use of Quantitative Import Restrictions to Safeguard Balances of Payments (October 1951). (U.K., pp. 72-74; France, pp. 46-47; Germany, pp. 48-49; Netherlands, pp. 56-57; Sweden, pp. 66-67; Italy, pp. 54-55.)
- GATT: Third Report on the Discriminatory Application of Import Restrictions (November 1952.) (U.K., p.28; France, p.22; Germany, p.22; Netherlands, pp. 24-25; Sweden, pp. 26-27; Italy, p.24.)
- GATT: International Trade 1952 (June 1953), pp. 66-87.

Summary of Foreign Control Regulations Applying to Imports From the United States

Country	Is import license necessary?	Is exchange permit required?
Afghanistan	Yes, for most items	Yes, unless dollars were acquired by sales of commodities other than karakul skins or cotton, or represent only 15 percent of karakul skin sales, or 90 percent of cotton sales which are not held by the National Bank of Afghanistan.
Anglo-Egyptian Sudan	Yes	Yes.
Arabian Peninsula areas: Saudi Arabia	No, except for International Wheat Agreement (IWA) shipments.	No, except for IWA shipments.
Aden, Bahrein, Qatar, Trucial Oman, Kuwait, Muscat, and Oman, Yemen	Yes	Yes.
Argentina	No.	No.
	No, certain products are subject to import quota.	Yes, permit granted only for "listed" products. Application should be filed prior to confirmation of purchase order.
Australia	Yes	Import license carries right to foreign exchange.
Austria	Yes, for most commodities	Yes.
Belgium-Luxembourg	Yes, either a regular import license or a declaration licenses.	Yes.
Belgian Congo	Yes, combination import license and exchange authorization is required for all imports except shipments valued at $100 or less, provided goods are not intended for resale.	Yes.
Bolivia	Yes, copy of permit or its number must be given to consul to obtain legalization of documents.	No, import license authorizes purchase of exchange but is not a guarantee that exchange will be granted.
Brazil	Yes	No, exchange for imports is sold at auction.
British colonies, not specified elsewhere [1]	Yes	Yes, import license generally assures release of foreign exchange.
Bulgaria	Yes	Import license automatically assures foreign exchange.
Burma	Yes	Yes.
Canada	No, except for a few commodities	No.
Ceylon	Yes, either a general license for commodities under open general license, or an individual license for other commodities.	Yes.
Chile	Yes, must be obtained prior to shipment of goods and copy must be sent to exporter.	Yes, in form of notation on import license.
Colombia	Import license takes the form of registry certificate issued without quota or other form of restrictions if merchandise is not included in list of prohibited imports.	No, registry certificate carries the right to foreign exchange.
Costa Rica	No	Yes, for imports with official exchange. No permit required for imports with free-market exchange.
Cuba	No, except for wheat, rice, tires, and tubes	No.
Czechoslovakia	Yes	Import license automatically provides for allocation of necessary foreign exchange.
Denmark	Yes, with few exceptions	Yes, for goods subject to license copy of license with customs certification of importation takes place of exchange license.
Dominican Republic	Yes, issued on arrival of imports. Special permits from the Dominican Department of Agriculture required on imports of fertilizers.	No, but all applications for foreign exchange require Government approval, which is granted almost automatically for bona fide commercial transactions.
Ecuador	Yes, one copy must be presented in order to obtain consular legalization of prescribed documents.	No, import license carries the right to foreign exchange (Central Bank of Ecuador).
Egypt	Yes, unlicensed imports are subject to confiscation.	Yes.
El Salvador	No	No.
Ethiopia	No, except on products subject to export license in country of origin.	Yes.
Finland	Yes	Yes.
France	Yes, obtainable for "essentials" only	Yes, import licenses carries right to foreign exchange.
French overseas territories not elsewhere specified	Yes	Import license carries right to foreign exchange.
Germany, Federal Republic (including Western Berlin)	Yes, also purchase authorization	Yes, import and payments license combined in one document.
Germany, Soviet-Occupied Zones	Yes, the government monopolies for foreign trade are the only importers.	No.
Greece	Yes, license granted for limited number of essential products.	Yes, import permit carries right to open letter of credit.
Guatemala	No, but importation of a few items is prohibited.	No.
Haiti	No, except for the required permit on wheat quota imports.	No.
Hashemite Jordan Kingdom	Yes	Yes.
Honduras	No	No.
Hong Kong	Yes, for dutiable, strategic, or short-supply goods, or goods subject to exchange control.	Yes, for dutiable, strategic, short-supply, or dangerous goods.
Hungary	Yes	Yes.
Iceland	Yes, except for items on "special conditional free list" and a limited number of staples.	Yes, except for "special conditional free list" imports.
India	Yes, either a general license for commodities under open general license, or an individual license for other commodities.	Yes, however foreign exchange is automatically released upon presentation of validated import license to exchange bank.
Indochina	Yes	Import license carries right to foreign exchange.
Indonesia	Yes	Import license carries right to foreign exchange.
Iran	Yes, but only to release goods from Customs; prospective imports must come within annual or supplemental quotas.	Yes.

Country	Is import license necessary?	Is exchange permit required?
Iraq	Yes, goods exported before license is obtained are confiscated.	Yes, permits are obtained through licensed dealers.
Ireland	For a few products only	Yes.
Israel	Yes	Yes, import license usually carries right to foreign exchange.
Italy	Yes, from Italian Exchange Office except for list A goods (mostly industrial raw materials, which require only bank "domiciliation").	Yes, combined with import permit in same document.
Japan	Yes	Some commodities, as announced by Japanese Government from time, to time, require allocation certificate; in other cases import license carries right to foreign exchange.
Korea, Republic of	Yes	Application for import license must be accompanied by certificate from Bank of Korea stating that applicant has sufficient foreign exchange cover on deposit.
Lebanon	Yes	No.
Liberia	No, except for arms, ammunition, and rice	No.
Malaya, Federation of	Yes, only certain items may be imported directly from hard-currency sources. Licenses to import nonsterling area goods via Hong Kong are issued provided certain exchange regulations are observed.	Yes, for direct imports. For imports from hard-currency areas via Hong Kong, no permit is necessary, but payment must be made in a sterling-area currency and shipment effected on a bill of lading issued in Hong Kong.
Mexico	Yes, for an extensive list of articles	No.
Morocco:		
French Zone	Yes, with exception of goods imported "sans devise," i.e., shipments financed by importer with his own funds held abroad.	Yes, except for goods imported "sans devise."
Spanish Zone	Yes	Import license carries right to foreign exchange.
Tangier (International Zone)	No.	No.
Netherlands	Yes	Yes ("payment attest").
Netherlands West Indies	No, except for certain luxury items	Yes.
New Zealand	Yes	Import license carries right to foreign exchange.
Nicaragua	Yes	No, import permit authorizes purchase of exchange.
Norway	Yes	Yes, but foreign exchange is automatically made available in currency specified in import license.
Pakistan	Yes	Yes, however, foreign exchange is automatically released upon presentation of validated import license to exchange bank.
Panama	No, except for tomato paste, tanned cattle hides, wheat flour, baby chicks, hatching eggs; a few items are, however, subject to quota restrictions.	No.
Paraguay	No	Yes, for all shipments except those valued at less than US$133.
Peru	No	No.
Philippines, Republic of the	No	Yes. Exchange must be allocated to individual importer for commodity to be imported.
Poland	Yes	Yes.
Portugal, including the Azores and Madeira	Yes	Yes.
Portuguese Colonies	Yes	Yes.
Rumania	Yes	Yes.
Singapore	Yes, only certain items may be imported directly from hard-currency sources. Licenses to import nonsterling area goods via Hong Kong are issued provided certain exchange regulations are observed.	Yes, for direct imports. For imports from hard-currency areas via Hong Kong no permit is necessary, but payment must be made in a sterling area currency and shipment effected on a bill of lading issued in Hong Kong.
Spain, including the Canary Islands	Yes, largely limited to essential raw materials.	Yes, special exchange rates are fixed for many import products.
Spanish Colonies	Yes	Import license carries right to foreign exchange.
Surinam	Yes	Import license carries right to foreign exchange.
Sweden	Yes, except for a few minor products	Yes, however, foreign exchange, including dollar exchange, is automatically made available if the import license specifies payment in such currency, and if the license is registered with a foreign exchange bank within 2 months after its issuance.
Switzerland	Import licenses are necessary for about 40 percent of Swiss imports. However, licenses for most of these are granted freely.	No difficulty in regard to exchange.
Syria	Yes	Yes.
Taiwan (Formosa)	Yes	Yes, except for Government purchases.
Thailand	No, except for gold, passenger cars, motorcycles, and certain paint oils.	No.
Turkey	Yes	Yes, special exchange license from the Control Office; one application suffices for both import permit and exchange control purposes.
Union of South Africa, including Southwest Africa, Bechuanaland, Basutoland, and Swaziland.	Yes, with exception of few specified imports from soft-currency countries all imports are subject to license. Imports from all countries of a long list of "nonessential" items are subject to special licensing restrictions.	No, import license carries right to foreign exchange up to amount expressed in local currency in relevant import license.
United Kingdom	Yes, except for a few products	Yes.
Uruguay	Yes	No, import license carries right to foreign exchange.
USSR	Yes, importing Government agencies are responsible for securing own permit.	Yes, all exchange allocated by USSR State Bank upon receipt of import license.
Venezuela	No, except for approximately 25 tariff items	No.
Yugoslavia	No. Individual import licenses abolished July 1, 1952; since that time only licensed import firms are allowed to carry on import operations.	No, but Government maintains strict control over foreign exchange allocations.

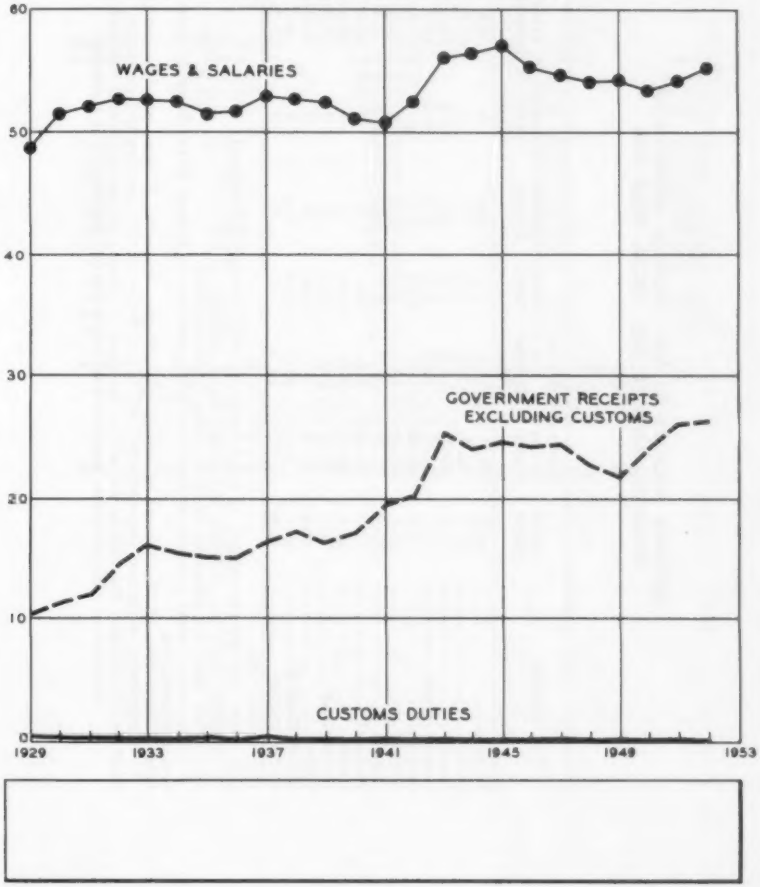
[1] Includes Bermuda, British West Indies, British East Africa, British West Africa, British Guiana, British Honduras, Northern Rhodesia, Southern Rhodesia, and minor colonies, protectorates, and trusteeship territories.

Section VII

Miscellaneous tables

WAGES & SALARIES, CUSTOMS DUTIES AND OTHER GOVERNMENT RECEIPTS

AS PER CENT OF GROSS NATIONAL PRODUCT



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REVENUE SOURCES OF THE CENTRAL GOVERNMENT SELECTED NATIONS FOR FISCAL YEAR 1951

Country	Income Taxes	General Sales Taxes	Excise and Customs Taxes	Other Taxes	Capital Levies	U. S. (Counterpart) Grants	Other Revenues	Total
Belgium	35.5	25.2	17.1	8.4	5.0	0	8.8	100
Canada	48.9	14.8	24.7	1.1	0	0	10.5	100
France	25.6	36.4	9.5	5.8	0.1	11.3	11.3	100
Germany (West)	23.3	20.7	21.3	4.1	6.9	9.8	13.9	100
Greece	0.6	20.0a	n.a.	12.0	0.1	45.7	21.6	100
Holland	41.4	22.0	17.4	6.3	1.5	0	11.4	100
Italy	11.9	17.2	45.0	0.8	1.9	16.4	6.8	100
Portugal[1]	19.0	34.9a	n.a.	n.a.	0	0	46.2	100
Sweden	43.4	41.2a	n.a.	n.a.	0	0	15.4c,b	100
Switzerland[1]	31.0	56.1a	n.a.	n.a.	0	0	12.9c,b	100
Turkey[1]	46.4	31.7a	n.a.	n.a.	0	0	21.9c,b	100
United Kingdom[1]	49.0	7.3	33.3	5.6	0.1	0	4.7	100
United States[2]	70.8	0	17.5c	c	0	0	11.7c,b	100

(1) Fiscal 1950.
(2) These data are percentages of total revenues, not of total tax revenues.
a General sales tax, customs, and excise taxes combined.
b Other taxes and resources combined under "other revenues."
c Per cent of total revenues exclusive of appropriations to Federal Social Security Trust Fund.
n.a. Not available.
Note: Comparisons of the finances of central governments, exclusive of those of state and local subdivisions, while not comprehensive, are useful where overall data are not available.
Sources: For Canada, Statistical Summary of the Bank of Canada; for other foreign countries, Economic Cooperation Administration Reports; for United States, Department of Commerce.

PRODUCTION OF SELECTED PRODUCTS IN OEEC COUNTRIES COMBINED

Monthly Average	Electric Power (Million kilowatt hours)	Hard Coal (Million metric tons)	Crude Steel (Million metric tons)	Cement (Thousand metric tons)
1938	10600	39.8	3.8	2938
1946	...	28.3	2.2	1719
1947	13800	30.7	2.6	1993
1948	15400	33.2	3.3	2635
1949	16500	36.2	3.9	3111
1950	18800	36.8	4.3	3600
1951	21000	38.5	4.7	4008
1952	22300	39.3	5.1	4285
1953				
Jan.	25400	42.6	5.5	3087
Feb.	22500	38.2	5.0	3140
Mar.	23700	42.3	5.5	4740

Note: The Organization for European Economic Cooperation consists of the following countries: Austria, Belgium, Denmark, France, Germany (Federal Republic), Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Trieste (Free territory), Turkey, Sweden, Switzerland, and United Kingdom

Source: OEEC Statistical Bulletins, General Statistics, July, 1953

GENERAL INDICES OF INDUSTRIAL PRODUCTION IN OEEC COUNTRIES
1950 = 100

	Member Countries Combined	Austria	Belgium	Luxembourg	Denmark	France	Germany F.R.	Greece
1938	82	74	81	73	65	83	107	83
1946	...	...	72	...	...	64	...	48
1947	...	...	91	75	76	77	...	61
1948	80	63	98	100	84	89	55	67
1949	90	84	98	95	89	98	79	79
1950	100	100	100	100	100	100	100	100
1951	110	114	115	122	102	112	119	114
1952	111	115	112	122	97	117	128	113

	Member Countries Combined	Ireland	Italy	Netherlands	Norway	Sweden	Turkey	United Kingdom
1938	82	58	79	72	67	61	58	76
1946	...	65	...	53	65	84	86	76
1947	...	71	...	68	77	86	89	80
1948	80	77	79	81	86	91	92	87
1949	90	88	87	91	93	96	98	93
1950	100	100	100	100	100	100	100	100
1951	110	102	114	104	105	104	106	104
1952	111	99	115	105	104	103	122	100

Note: The Organization for European Economic Cooperation consists of the following countries: Austria, Belgium, Denmark, France, Germany (Federal Republic), Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Trieste (Free territory), Turkey, Sweden, Switzerland, and United Kingdom

Source: OEEC Statistical Bulletins, General Statistics, July, 1953

SELECTED INDICES OF INDUSTRIAL PRODUCTION
FOR OEEC COUNTRIES COMBINED
1950 = 100

	General Index	Mining and Quarrying	MANUFACTURING					
			Total	Food Beverages Tobacco	Textile Industries	Chemical Industries	Basic Metal Industries	Metal Products Industries
1938	82	106	82	...	89	71	...	77
1946	...	...	...	...	...	...	...	...
1947	...	...	...	...	...	...	...	...
1948	80	89	79	82	80	72	79	80
1949	90	96	90	92	89	84	92	92
1950	100	100	100	100	100	100	100	100
1951	110	107	110	102	104	117	116	113
1952	111	112	110	104	93	112	123	120

Note: The Organization for European Economic Cooperation consists of the following countries: Austria, Belgium, Denmark, France, Germany (Federal Republic), Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Trieste (Free territory), Turkey, Sweden, Switzerland, and United Kingdom

Source: OEEC Statistical Bulletins, General Statistics, July, 1953

Appendix 10

Analysis of Legislation, Treaties and Regulations Affecting the Ability of American Manufacturers to Compete with Foreign-Produced Goods

Prepared for

NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION

by

Donovan Leisure Newton & Irvine

November 11, 1953

PART I

INTRODUCTION

The Problem

The problem is to determine the extent to which American industry today operates under statutes, regulations and economic conditions which affect its ability to compete successfully with foreign industry for the American market. This study deals with the Acts of Congress and the rules and regulations of various governmental departments and agencies which bear on the problem directly or indirectly.

The relevant statutes and regulations fall into two categories. In the first category are those enactments designed to protect American industry from ruinous foreign competition. Among these we will be concerned with the Buy American Act, tariff legislation and the various reciprocal trade agreements made under the Reciprocal Trade Agreements Acts, particularly the post-war General Agreement on Tariff and Trade negotiated originally at Geneva and expanded at Annecy and Torquay. These agreements express an increasingly liberal policy by the United States Government to encourage imports by tariff reductions and concessions.

The second category consists of legislation which imposes on American suppliers who wish to deal with the Government standards relating to wages, hours and working conditions which may be more stringent than those applicable to foreign manufacturers. Typical of this type of legislation are the Walsh-Healy Public Contracts Act and the Fair Labor Standards Act.

This study is divided into two parts. The first consists of a discussion and analysis of the problem as stated. The second part consists of a series of appendices containing more detailed summaries and excerpts of the statutes, rules, and regulations involved.

At the outset it can be said, by way of brief summary, that the cost-wise disadvantages which our standard of living imposes on domestic producers are increased by such laws as the Walsh-Healy Act. The traditional protection afforded by our tariffs has been substantially decreased. At the same time, while the "Buy American Act" still stands on the books, current administrative interpretation and application of its provisions have considerably weakened its force as a protection to domestic industry and the American standard of living.

I

STATUTES AND REGULATIONS DESIGNED TO PROTECT AMERICAN INDUSTRY FROM RUINOUS FOREIGN COMPETITION.

A. Buy American Act of 1933

General

The Buy American Act of 1933[1] applies to all Government purchases of articles, materials or supplies for public use within the United States, its territories and possessions. It provides that Governmental agencies procuring such products for use within the United States must purchase domestic products only unless (a) such products are not available in sufficient commercial quantities of satisfactory quality, (b) the agency head determines that the purchase of the domestic product would not be in the public interest, or (c) the agency head determines that the cost of the domestic product is unreasonable.

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1. See Appendix 1. Several other statutes either expressly require compliance with the Buy American Act or certain domestic preference requirements of their own in varying degrees. See Appendices 2 through 6.

The intended purposes of this Act were twofold - first, to serve as a means of sustaining the employment of American labor during the time of depression, and second, to retaliate against similar "Buy British" policies in effect at that time. The immediate occasion for the introduction of this legislation[2] was the fear that contracts for heavy electrical equipment for use at Boulder Dam might be awarded to German and other foreign producers of such equipment.[3]

Limitations on the Application of the Buy American Act.

As previously stated, the Act applies only to purchases for public use within the United States, its territories and possessions. It does not, therefore, apply to purchases made by Governmental agencies at the instance of the Foreign Operations Administration and financed by F.O.A.[4]

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2. This Act was introduced by Senator Hiram Johnson of California on February 2, 1933 as a floor amendment to the Treasury and Post Office Department Appropriation Act of 1934. It became law when the Appropriation Act was signed by President Hoover on March 3, 1933.

3. For excerpts from the Congressional Record see Appendix 7.

4. F.O.A. was created by Reorganization Plan No. 7 of 1953, the functions of M.S.A. were transferred to it and M.S.A. was abolished, all effective Aug. 1, 1953. (Aug. 4, 1953, 18 F.R. 4541). By Executive Order No. 10476 (Aug. 4, 1953, 18 F.R. 4537) the President, who had previously delegated his own functions under the various foreign assistance acts to M.S.A., re-delegated them to F.O.A.

Contracts, therefore, entered into by the Department of Defense for products purchased at the request of F.O.A. and financed by F.O.A. contain no reference to the Buy American Act. Actually most functions exercised under the various foreign assistance acts have been exempted from the requirements of the Buy American Act by executive order.[5]

Orders, Directives and Regulations
Promulgated under the Buy American Act.

The Buy American Act does not establish standards as to what would be "inconsistent with the public interest" or what would constitute "unreasonable cost."

For the purposes of this study it may be said that the major government purchasing agencies are the Department of Defense, the General Services Administration, the Department of Interior and the Atomic Energy Commission. Each of these departments has issued written policies on the application of the Buy American Act and has issued orders, directives and regulations conforming to such policies. The written

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4. (cont.)
F.O.A. makes no direct purchases of its own in connection with the foreign aid programs. Purchases in general are made either directly by the foreign country or importers located therein on "Procurement Authorizations" issued by F.O.A. or by other Government agents on requisition by F.O.A. (See M.S.A. regulations, 22 CFR 201.2-201.20). The General Services Administration, for example, handles a large volume of F.O.A. financed purchases destined for southeast Asia.

5. See Appendix 8.

policies of each agency are in accord in two basic respects - first, all establish the same percentage differential for use in applying the "unreasonable cost" criterion provided for in the Act, and second, none, with the possible exception of the Department of Defense, establishes any standard to be applied in determining whether an award to a domestic bidder would be "inconsistent with the public interest."

So far as the "unreasonable cost" criterion is concerned, the policy of each department provides that the cost of the domestic product is to be deemed unreasonable when it exceeds that of the foreign product by 25% or more, or 100% or more if the cost of the foreign product is less than $100. Under the various regulations, directives and orders, contracting officers charged with the duty of making awards have little, if any, discretion but to make their awards to the foreign bidder where the prescribed differential is exceeded.

The figure of 25% is not new. It first appeared in a written policy statement issued on March 31, 1934, by the Branch of Supply of the Procurement Division of the Treasury Department[6] as a test of the reasonableness of domestic cost with respect to purchases exceeding $5,000.[7] Thus, it is apparent that the figure of 25%, even if realistic in 1934, must be in and of itself unrealistic when applied under today's inflationary conditions.

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6. Circular Letter No. 6.
7. See Appendix 9.

While all departments apply the differential of 25%, their method of application differs. Thus, the Armed Forces except the Coast Guard, and the Atomic Energy Commission, apply the 25% differential to a figure which includes the foreign cost plus duty. The General Services Administration and the Department of Interior, on the other hand, apply the 25% to the cost of the foreign product less duty. The resulting figure and the duty are then added to the cost of such product for purposes of comparison with the domestic bid.

What is Inconsistent with the Public Interest.

Present day policies of trade without aid and the like have rendered the 25% price differential of little actual effect. The question of "public interest" is now the overriding consideration and all the policies which must be followed by agency heads give such heads the right to determine whether the award to a domestic producer would be in the public interest even in cases where the 25% differential is not exceeded.

Specific Departmental Regulations.

1. General Services Administration.

The General Services Administration was created in 1949 and is charged with the purchase, on behalf of all agencies of the government, of supplies commonly used by them in their operations. It also has the duty of making

purchases directed by the Office of Defense Mobilization under the Strategic and Critical Materials Stock Piling Act of 1939,[8] and of making purchases and commitments to purchase metals, minerals and other materials for Government use and for resale under the Defense Production Act of 1950.[9] The G.S.A. regulations[10] authorize the head of the department or independent agency concerned in "appropriate cases" to determine that the public interest is inconsistent with the purchase of a domestic product for any reason other than the comparative cost of the foreign product. It neither defines the term "appropriate case" nor does it establish any procedure for bringing particular instances to the attention of the head of the department or agency.

Department of Defense.

Procurement activities of the Department of Defense are conducted under the Armed Forces Procurement Act of 1948.[11]

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8. Under Reorganization Plan No. 3 of 1953 the function of directing purchases to be made under the Act was transferred from the Secretaries of the Army and Navy to ODM (18 FR 3375).

9. The Act states that the President "may make provision for" the purchase, etc. By Executive Order No. 10480 (Aug. 14, 1953, 18 FR 4939) he authorized and directed GSA to do so subject to the provisions of the Act.

10. These regulations are almost a verbal restatement of the old Bureau of Supply Circular Letter B-61 dated Oct. 1, 1947. See Appendix 9, See Appendix 10.

11. 41 USC 151-161.

For the conduct of these activities the Secretaries of the Army, Navy and Air Force have issued joint regulations called the Armed Services Procurement Regulation. The Coast Guard is not covered by the joint regulations and has issued regulations of its own.

The joint Army, Navy and Air Force Regulations deal, among other things, with the Buy American Act.[12] Their administration can best be described by setting forth in full the latest Department of Defense directive dated June 19, 1952:[13]

"19 June 1952
NUMBER 4105.22

DEPARTMENT OF DEFENSE DIRECTIVE

SUBJECT Administration of the 'Buy American' Act

Reference: (a) Department of Defense Directive 4105.20, 27 May 1952 'Buy American Act' Administration

1. At the request of the Secretary of Defense, the Munitions Board recently reviewed Defense procurement policy with respect to administering the provisions of the 'Buy-American' Act, in order to determine whether or not it was consistent with the objectives of the Mutual Security Program and U. S. foreign economic policy.

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12. See Appendix 11. The Secretaries of the Army and the Air Force have promulgated regulations supplementing the joint regulations. The Secretary of the Navy has not. For provisions of the Army and Air Force supplemental regulations relating to the Buy American Act, see Appendices 12 and 13.

13. See Appendix 14 and Appendix 15.

2. The Munitions Board directed the Armed Services Procurement Regulations Conference to amend Paragraph 6-105.1, of the regulations, reference (a), to make it mandatory, in any case involving foreign bids of less than 25 percent differential, where the total amount of the lowest acceptable foreign proposal exceeds $25,000, for the Contracting Officer to submit the matter for consideration of the Secretary of the military department concerned. The Board further directed that the change in the regulations was to become effective on June 1, 1952.

3. The purpose of this directive is to assure that proposed awards, which will be reviewed at the Service secretarial level, will be evaluated in such a manner as to give due weight to the objectives of the Mutual Security Program.

4. For the Department of Defense adequately to support the Mutual Security Program and promote the mutual security of the United States and other friendly countries, it is requested that competitive bids from sources in the United States and friendly foreign countries be considered on a common basis, this being consonant with the public interest. Where one or more of the following factors exist, careful discretion should be exercised in determining the award:

A. Strategic Considerations:

1. Competing foreign sources would be unreliable because of:

   (a) Limited capacity or

   (b) Location in an area where political or economic instability might hinder production or delivery.

2. The articles, materials, supplies or their related U.S. production facilities are of such strategic importance that domestic self-sufficiency must be fostered.

3. No appreciable logistical advantage to collective security would result from maintaining or increasing production capacity in the foreign source country concerned.

B. Domestic Economic Considerations:

1. The furnishing of scarce materials or production equipment which would be required from the United States would unduly interfere with United States military production or the development of the United States industrial mobilization base.

2. The competing domestic source would be a facility or facilities designated as 'small business' by the Small Defense Plants Administration.

3. The competing domestic source would be located in an area which has been designated by the Department of Labor as being one of substantial labor surplus, i.e., classified by the Department of Labor as a 'Group IV' area.

4. Competing domestic sources are found in an industry which is depressed or which is characterized by widespread open capacity.

/s/ WILLIAM C. FOSTER

Acting Secretary of Defense"

It has been considered worthwhile to include the above directive in its entirety because it states in clear terms the overriding consideration which governs the Department of Defense. That consideration is the mutual security program of the United States as formulated and interpreted from time to time by the Department of State.

This directive is singular and notable in that it lists strategic and domestic economic considerations which may require the award of a contract to a domestic producer regardless of the price differential.

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The Coast Guard.

As in the case of the Army, Navy and Air Force, the Coast Guard procurement is governed by the provisions of the Armed Services Procurement Act of 1948. In so far as it applies to the Buy American Act, the Coast Guard regulation[14] is distinctive in that if after the application of the 25% differential the foreign bidder is still low, it is required that all bids be forwarded to headquarters for instructions or a certificate from the head of the department concerned prior to the award of the contract. It contains no mention of the public interest criterion and it does not prescribe any procedure for submission to higher authority in cases where the 25% differential is not exceeded.

Department of the Interior.

The procurement and contract functions of the Department of Interior are governed by the general laws on the subject. The department has promulgated no regulations prescribing procurement and contracting procedures generally. It has, however, issued an order and an amendment thereto relating specifically to the Buy American Act.[15] The original order merely prescribed the standard 25% differential for the determination of unreasonable cost and made no provision for review in cases where the differential is not

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14. See Appendix 16.

15. No. 2289 Jan. 1, 1947, September 26, 1951 No. 2289 Amendment No. 1.

exceeded. The amending order, however, conferred discretion upon the head of the bureau or office concerned to submit particular cases for the consideration of the secretary as to the reasonableness of the cost of a domestic product if the lowest domestic bid exceeds the lowest foreign bid by an amount greater than $50,000 even though the differential remains less than 25%,[16] and of course the Secretary of the Interior is empowered to determine whether an award to a domestic bidder would be inconsistent with the "public interest."

Atomic Energy Commission.

On September 3, 1952 the Atomic Energy Commission issued a written statement of policy with respect to the Buy American Act.[17] This policy provides that in any case involving a differential of less than 25% contracting officers may submit the matter to the agency head. In addition, contracting officers must submit the matter for such consideration when the differential is more than $5,000 although less than 25%. The policy does not enumerate any factors which must be considered by the agency head in making his determination.

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16. See Appendix 17.
17. G.M. Bulletin S & S - 41; See Appendix 18.

Efforts to Achieve Uniform Administrative Policy with Respect to the Buy American Act.

Under the date of July 13, 1953 proposals over Secretary Dulles' signature for the purpose of bringing about a uniform policy to be followed by all agencies regarding the administration of the Buy American Act were circulated. This document is classified as "confidential" and its contents and the nature of its proposals are unavailable at this time.

The Buy American Act Affected by Title II of the First War Powers Act of 1941.

The First War Powers Act of 1941 provided in part that the President, whenever he deems that such action would facilitate the prosecution of the war, may authorize any department or agency of the Government exercising functions in connection with national defense to enter into contracts without regard to the provisions of law relating to the making of contracts. The provisions of this Act were reinstated on January 12, 1951 and all the agencies with which we are concerned were authorized to act in accordance with its provisions.[18] Such delegations of authority have been extended to June 30, 1954.

Similar delegations made under the original Act were held to carry with them the authority to disregard restrictions imposed by the Buy American Act.

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18. The basic executive order was No. 10210. See Appendix 19.

B. TARIFF LEGISLATION

Traditionally tariffs have been recognized as devices to enable American industry to meet foreign competition for the domestic American market. Such protection was rendered by the provisions of the Tariff Act of 1930 which established a basic rate of duty on most imported electrical products, including such items as generators and transformers, of 35% ad valorem.[19] This Act is substantially impaired by agreements made under the Reciprocal Trade Agreements Act of 1934. The impact of these agreements is dramatically illustrated by the fact that as of now the basic 35% rate established by the 1930 Tariff Act applies to flashlights only. Current rates on the balance of the electrical items included range from a low of 8 3/4% to a high of 20%. The current rate on transformers is 12 1/2% and on generators 15%.[20]

Effect of Administration of Reciprocal Trade Agreements Act on Rates of Duty for Electrical Products.

Section 1 of the Reciprocal Trade Agreements Act authorizes the President to enter into foreign trade agreements which modify existing duties and other import restrictions if he finds as a fact that existing duties or other import restrictions are unduly burdensome and restrictive to United States foreign trade and that the expansion of such trade will be promoted thereby. It is further provided that the proclaimed duties and other restrictions shall

19. See Appendix 20.
20. See Appendix 21.

apply to the products of all foreign countries whether imported directly or indirectly. This provision is, however, subject to the proviso that the President may suspend such application to the products of any particular country because of its discriminatory treatment of American commerce or because of other acts or policies which in his opinion tend to defeat the purposes of the act.[21]

The President's authority to proclaim modifications of duties under the act was redefined in 1945 as follows:

> "No proclamation shall be made increasing or decreasing by more than 50 percentum any rate of duty, however established, existing on January 1, 1945..." 22

Prior to 1945 the Reciprocal Trade Agreements Act of 1934 had authorized tariff increases or decreases up to 50% of the rates fixed by the 1930 tariff act. In fact agreements were made prior to 1945 establishing very substantial cuts and the 1945 amendment permitted still further reductions.[23]

The first of the major post-war reductions resulted from the negotiation at Geneva of a multilateral trade agreement known as the General Agreement on Tariff and Trade.[24] Among those signing this agreement were the United States, United Kingdom, Australia, Belgium, Canada, France, Luxemburg and the Netherlands. The reduced United States rates which resulted therefrom became effective on January 1, 1948.[25]

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21. See Appendix 22.
22. 19 USC 1351 a 2, at Appendix 22.
23. See Appendix 23.
24. 61 Stat. Parts 5 and 6.
25. See Appendix 24.

After the effective date of the General Agreement, the pre-existing bi-lateral agreements with the United Kingdom, Belgium, France, Netherlands and Canada were rendered inoperative.[26]

In 1949 further meetings took place at Annecy, France and an agreement known as the Annecy Protocol of Terms of Accession and the Annecy Schedules of Tariff Concessions was entered into.[27] This agreement resulted in additional tariff concessions and the accession of several new nations including Italy and Sweden. The new rates of duty agreed to by the United States became effective on May 13, 1950.[28]

From September 1950 until April 1951 a third series of negotiations took place at Torquay, England which resulted in the Torquay Protocol of Terms of Accession and the Torquay Schedules of Tariff Concessions. Several new nations including the Federal Republic of Germany became signatories to the General Agreement and further concessions were made by the United States.[29]

As of now all major nations outside the Iron Curtain[30] except Japan and Switzerland are parties to the General

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26. 61 Stat. 3689, 3715, 3721 and 3725; and Proc. No. 2763, Dec. 24, 1947, 12 F.R. 8866.
27. 64 Stat. Part 3, B 139, et seq.
28. See Appendix 25.
29. See Appendix 26.
30. Including the United Kingdom, France, Belgium, Netherlands, Germany, Italy and Sweden.

Agreement on Tariff and Trade either as original signatories or by accession at Annecy or Torquay and are entitled to the benefits thereof as a matter of right. So far as Switzerland is concerned, the bi-lateral agreement dated 1939 continues in effect and by virtue of its "most favored nation clause"[31] that country is entitled to the benefit of all tariff concessions made by the United States as the result of the General Agreement.

With respect to Japan, it should be noted that further negotiations among the General Agreement signatories and other nations are now under way at Geneva and that among the subjects on the agenda is the accession of Japan. Moreover, the Reciprocal Trade Agreements Act itself provides that reduced duties proclaimed by the President pursuant to any trade agreement are applicable to imports from all foreign countries unless suspended by the President. At the present time and for some time past it has been the United States policy to generalize to all countries concessions which it has granted in trade agreements whether or not the particular country involved is a contracting party. As of now only nations behind the Iron Curtain are under suspension. The current edition of the Tariff Commission's "United States Import Duties, 1952" shows that maximum reductions have been made on fourteen electrical items including transformers.

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31. See Appendix 27. Under the "most favored nation" clause in the General Agreement, nations signatory thereto are entitled to benefits of agreements between the United States and non-signatory nations such as Switzerland. See Appendix 28.

Further reduction is permissible on generators from the present 15% to 12 1/2%.

Relief Provisions Under the Tariff Act of 1930.

The Tariff Act of 1930 contains several provisions for the adjustment of current tariff rates under specified circumstances.[32] These are scarcely worthy of extended discussion however since the most important of them are rendered inapplicable by the Reciprocal Trade Agreements Act.[33]

Relief Provisions under the Reciprocal Trade Agreements Act of 1934.

The most important relief provisions of the Reciprocal Trade Agreements Act are the so-called "escape" and "peril point" clauses. The "peril point" provisions provide a procedure whereby the Tariff Commission, prior to the execution of a trade agreement, may establish limits to which concessions may be made.[34] The "escape" clause provisions provide a procedure for applying for a modification of rates of duty established by trade agreements already negotiated and for the inclusion of such escape clauses in future agreements.[35]

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32. See Appendices 29, 30, 31, 32, 33a and 33b. An additional statute is the Anti-Dumping Act of 1921 as to which see Appendix 34. Regulations of the Tariff Commission and the Bureau of Customs under various of the 1930 Act provisions of this type are reproduced in Appendices 35, 36 and 37.

33. See Appendix 38.

34. See Appendix 39.

35. See Appendix 40.

Escape Clause Procedures.

The "escape clause" provisions provide that, upon application by an interested party,[36] the Tariff Commission must make an investigation, and, not later than 9 months from date of application, a report, to determine "whether any product upon which a concession has been granted under a trade agreement is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported into the United States in such increased quantities, either actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive products."

When during the course of its investigation the Commission finds evidence of serious injury or threat thereof, it is required to hold hearings on public notice. If, as the result of its investigation and hearings it finds the situation above quoted to be present, the Commission "shall recommend to the President the withdrawal or modification of the concession, its suspension in whole or in part, or the establishment of import quotas, to the extent and for the time necessary to prevent or remedy such injury." Provision is made for transmission of copies of its report and recommendations to the President, to the Senate Finance and the House Ways and Means Committees.

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36. Or upon request of the President, resolution of either House of Congress, its own motion or upon resolution of either the Senate Finance Committee or the House Ways and Means Committee.

Upon receipt of the Tariff Commission's report, the President may, but is not required to make, the recommended adjustments. If he does not make them within 60 days, he must immediately submit a report to the Senate Finance and the House Ways and Means Committees stating why he has not.

When, in the Tariff Commission's judgment, no sufficient reason exists to recommend adjustments to the President, it must nevertheless make and publish a report stating its findings and conclusions.

Aside from the above procedural provisions, the Act provides that in arriving at its determination, the Commission, without excluding other factors, "shall take into consideration a downward trend of production, employment, prices, profits, or wages in the domestic industry concerned, or a decline in sales, an increase in imports, either actual or relative to domestic production, a higher or growing inventory, or a decline in the proportion of the domestic market supplied by domestic producers."

The current rules of practice and procedure of the Tariff Commission applicable to investigations under the escape clause provisions of the Act are set forth in Appendix 40.

The present "escape clause" criteria and procedures were first made a part of the statute by the Trade Agreements Extension Act of 1951. Prior thereto relief of this general type had been prescribed by various executive orders. Under

these orders, there was no procedure for submission of reports to the House and Senate Committees. Discretion was vested in the President to determine whether or not modification would be in the public interest. Further none of the orders specified any particular factors to be considered by the Commission in the course of its investigation.

From the date of the initial executive order (Feb. 25, 1947) to the present time, the Tariff Commission has received a total of fifty-one applications from private parties for investigations under escape clause procedures. Of these fifty-one applications, nineteen had been completed prior to the enactment of the statutory escape clause on June 26, 1951. Of the remaining thirty-two applications, twenty-three have been finally disposed of and nine are still pending.[37]

Of the forty-two applications which have been finally disposed of only six resulted in recommendations by the Commission that trade agreement concessions be modified; and with respect to these six, the President accepted the recommendations and placed them in force by proclamation in three instances[38] and rejected them in three instances.[39] In

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37. See Appendix 42.

38. Women's fur felt hats and hat bodies: Proc. No. 2912, Oct. 30, 1950, 15 F.R. 7415; Hatters' fur: Proc. No. 2960, Jan. 5, 1952, 17 F.R. 187; Dried figs: Proc. No. 2986, Aug. 16, 1952, 17 F.R. 7567. The recommendations of the Commission were unanimous in each of these instances.

39. Jeweled watches and watch movements: Aug. 14, 1952; Garlic: July 21, 1952; Screen printed silk scarves: June 10, 1953. The Commission's recommendations were unanimous in the silk scarf proceeding but not in the watch and garlic proceedings.

connection with those instances in which concessions were thus withdrawn, it is to be noted that the President, by executive order has provided for continuing surveillance and review by the Commission and for restoration of the concession, in whole or in part, by the President upon the Commission's recommendation based upon investigation and full hearing.

It appears from the Commission's reports of its escape clause investigations that there has been a sharp difference of opinion among its members regarding the interpretation to be placed upon the phrase "domestic industry producing like or directly competitive products."[40] In several proceedings to date, the majority of the Commission, in refusing to recommend modifications in duty concessions on particular products, has taken the view that, in considering whether such industry has sustained or is threatened with serious injury, it must look to the results of the overall operations of the industry as a whole and not merely to the results of the industry's operations with respect to the particular product under inquiry. The majority in several instances has considered no modification to be necessary where the facts showed that a multiple product industry had continued to operate profitably without any appreciable decrease in overall employment despite drastic

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40. See Appendix 40: 19 USC 1364A.

curtailment in the production of the particular product with respect to which application for investigation had been brought. A somewhat similar view was taken by President Truman and in part formed the basis for his rejection of the Commission's recommended modification of concession, in the watches and watch movements proceeding.[41]

The above viewpoint of the majority of the Commission is evident, for example, in its September, 1952 report on the groundfish fillets industry. In this report, the majority pointed out that several of the groundfish filleting concerns involved engaged in other processing activities besides filleting and that "while there have been ups and downs from year to year in their earnings, they are on the whole, as an industry, operating on a profitable basis."[42]

Similarly, in its report on the glace cherry industry, published in October of 1952, a majority of the Commission pointed out that several of the concerns involved produced other glace fruits as well as canned goods of varying sorts. The majority report commented that the gross value of sales by these concerns, despite curtailment of glace cherry production, was in fact greater in 1951 than it had been in 1948. It also commented that despite the

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41. See Tariff Commission Report No. 176, Second Series, p. 78: Watches, Watch Movements, Watch Parts and Watchcases, Report to the President on the Escape-Clause Investigation with the President's Statement on the Commission's Recommendations, 1953.

42. United States Tariff Commission, Groundfish Fillets, Report on Escape-Clause Investigation Under Section 7 of the Trade Agreements Extension Act, of 1951, pp. 20-21.

curtailment of glace cherry production, there had been no appreciable decrease in over-all employment in the concerns involved. With respect to this point, the majority stated that whatever decreases did occur in employment devoted to the production of glace cherries were offset by increases in employment devoted to the production of other products by the producing concerns.[43]

The above views of the majority in the glace cherry report were the subject of vigorous dissent by Commissioners Brossard and Gregg as follows:[44]

> "This situation [production of products other than glace cherries] apparently leads the majority to the conclusion that there is no glace-cherry industry, as such, but that the domestic industry (referred to in Section 7 of the Trade Agreements Extension Act of 1951) is one consisting of

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43. United States Tariff Commission, Glace Cherries, Report on Escape-Clause Investigation under Section 7 of the Trade Agreements Extension Act of 1951, p. 12.

44. Ibid, pp. 18-19. To similar effect, see the dissenting statements of Commissioner Brossard in the Commission's report on its second investigation of the wood screw-industry. (United States Tariff Commission, Wood Screws of Iron and Steel (1953), Report on Escape-Clause Investigation under Section 7 of the Trade Agreements Extension Act of 1951, Washington, 1953, p. 16) and in its investigation of the chalk whiting industry (United States Tariff Commission, Chalk Whiting [Chalk or Whiting or Paris White; Dry, Ground, or Bolted], Report on Escape-Clause Investigation No. 15 Under Section 7 of the Trade Agreements Extension Act of 1951). In the latter proceeding, the applicant was the only domestic producer of chalk whiting. The evidence showed that the ratio of imports of this product to domestic production had increased from 23% to 161% during the period 1946-1952 and that during the same period the ratio of imports to domestic consumption had increased from 19% to 62%. The majority found, however, that there was considerable domestic production of another product which was competitive with chalk whiting, that the"domestic industry" involved was that which produced chalk whiting and the competitive product and that, viewed in this light the industry was not being harmed by imports of chalk whiting.

> producers of glace fruits and like products, in which the production of glace cherries is but a relatively minor part. Thus, based on such reasoning, even if imports of glace cherries are seriously injuring the glace-cherry business of domestic producers who manufacture and sell glace cherries, no serious injury can be found to such producers because they are or may be producing other products as well as glace cherries and their over-all operations might still be profitable; the majority apparently believes that, if any injury that may be caused to producers of glace cherries by a decline in the production of that product can be compensated for by the manufacture and sale of other products, no finding of injury is warranted. We wish emphatically to dissent from any such interpretation either of the facts as revealed in this investigation or of Section 7 of the Trade Agreements Extension Act of 1951.
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> . . . . .
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> "More important, however, than this consideration, in our judgment, is the fallacy involved in the theory that producers of a particular product cannot be found to be seriously injured because of the possibility that they might cease the production of the item in question, and undertake increased production of other items or convert their operations to importing, thus retaining their markets, but abandoning their functions as producers of the product in question. We believe that any such interpretation will defeat the purpose of the escape-clause legislation. An interpretation of the escape clause which results in the elimination of many small industries on the uncertain ground that producers in those industries could shift to other lines of production, leaving the market in the United States for the particular products under consideration to foreign producers, surely does violence to the intent of Congress."

In the jeweled watch and watch movement proceeding, the original application for relief was concerned solely with watches containing between 5 and 17 jewels, domestic production of which, the evidence showed, had been virtually discontinued in large part by reason of Swiss import competition. On its own motion the Commission extended the scope of its

investigation to include all watches falling within the purview of the applicable Tariff Act paragraph. Three of the Commissioners found that domestic industry had already been injured by the imports and that further injury was threatened. One found only that injury was threatened and the remaining two found that injury had neither been caused nor was threatened.

The evidence showed that the industry as a whole continued to show a profit, despite abandonment of production of watches containing less than 17 jewels, in part because former manufacturers of such watches had concentrated on the production of watches containing more than 17 jewels. With respect to this aspect of the case, the President, in rejecting modifications of tariff concessions recommended by the majority of the Commission, stated as follows:[45]

> "Another development in the watch industry on which the three Commissioners' finding was based is the shift from production of watches with 17 jewels or less to production of watches with more than 17 jewels. To some of the Commissioners, this shift is an evidence of injury, even though the industry profited from its shift to greater production of the more expensive watches containing 17 jewels or more. It is difficult to see how any serious injury is evidenced by a shift from the production of one product to the production of another which can be produced with equal or greater profit by the same labor and equipment."

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45. United States Tariff Commission, Report No. 176, Second Series, p. 78: Watches, Watch Movements, Watch Parts, and Watch Cases, Report to the President on the Escape-Clause Investigation with the President's Statement on the Commission's Recommendations.

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Peril Point Procedures.

Unlike the provisions previously referred to, the "peril point" provisions of the Act[46] represent an attempt to close the barn door before the horse escapes. They are not designed to afford relief from existing situations.

Under these provisions, the President, before entering into negotiations concerning any proposed foreign trade agreement must furnish the Commission with a list of all products with respect to which duty modifications are contemplated. The Commission must then investigate (and in connection with its investigation, hold public hearings) and report to the President as to each product 1) the limit to which concessions may be made without causing or threatening serious injury to domestic industry, and 2) if any increases may be required to avoid such injury, the minimum increases required. This report must be submitted within 20 days after receipt of the list and no agreement may be made until the report has been submitted.

If a trade agreement is subsequently concluded which either fails to observe the limits of modification or to put into effect the minimum increases, the President must, within 30 days thereafter, transmit a copy of the agreement to Congress stating his reasons for the action so taken and identifying the products involved. The Commission must then submit

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46. See Appendix 39.

to the Senate Finance Committee and the House Ways and Means Committee a copy of the portions of its report relating to the particular products involved.[47]

The "peril point" provisions were not a part of the law during the period of the Geneva negotiations that resulted in the signing of the General Agreement on Tariff and Trade in October of 1947. The procedure at that time, while it did provide for the expression of public views before the Committee on Reciprocity Information, did not provide for the establishment of any minimums or detailed reports.

"Peril point" provisions were first enacted into law by the Trade Agreements Extension Act of 1948[48] and were in effect until the following year when they were eliminated by the Trade Agreement Extension Act of 1949. Hence they were in effect during the course of the Annecy negotiations but not the negotiations at Torquay. During the latter negotiations, the procedure prescribed by executive order was again similar to what it had been prior to the passage of the 1948 act. The "peril point" provisions in their current form date from the Trade Agreements Extension Act of 1951.

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47. The Tariff Commission's rules of practice and procedure relating to "peril point" investigations are reproduced in Appendix 43.

48. June 26, 1948, c. 678, 62 Stat. 1053.

II.

LEGISLATION WHICH INCREASES COSTS

American producers are subject to various statutes and regulations which, because of conditions they attach to the employment of labor, tend to increase production costs. These are as follows:[49]

The Walsh-Healy Public Contracts Act of 1936;

The Eight-Hour Law of 1912;

The Davis-Bacon Act of 1931;

Convict Labor statutes; and

The Fair Labor Standards Act of 1938.

All except the Fair Labor Standards Act apply specifically to labor employed on Government contract work. The Walsh-Healy Act applies only to contracts for materials or supplies; the Davis-Bacon Act applies to construction contracts; and the Eight-Hour Law and Convict Labor statutes apply to both construction contracts and contracts for material and supplies.

In considering this legislation it must be borne in mind that it is important to this study only to the extent that it has no foreign counterpart and it does not apply in the United States or elsewhere to the contractor supplying the foreign product. In this connection, it can

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49. Of less significance and therefore not specifically listed are the Miller Act of 1935 (See Appendix 44) and the Copeland Act of 1948 (See Appendix 45).

be said generally that either expressly by statute or by interpretation, each of the statutes, if otherwise applicable, applies to all contract functions which are to be performed within the United States, its territories or possessions. Conversely, none of them apply to contract functions to be performed outside the boundaries of the United States, its territories or possessions.

The Walsh-Healy Public Contracts Act.[50]

This Act applies primarily to contracts with governmental agencies for the manufacture or furnishing of materials, supplies or equipment. Briefly, summarized, it requires the inclusion, in all such contracts in which the amount involved exceeds $10,000,[51] of stipulations as to the contractor's status as manufacturer or regular dealer, minimum wages to be paid,[52] maximum hours of labor to be observed, [53] non-employment

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50. See Appendix 46.

51. The Department of Labor's Division of Public Contracts has promulgated rulings and interpretations which are concerned with the problem of when a contract will be deemed to exceed $10,000 in amount and hence be subject to the Act. The applicable rulings and interpretations are reproduced in Appendix 47.

52. The provisions requiring minimum wage stipulations and representations apply only to purchases or contracts relating to such industries as have been the subject of minimum wage determination by the Secretary of Labor. No such determination has as yet been made with respect to the electrical industry as such so that this requirement would generally be inapplicable to it. (See 41 CFR, Sec. 202.2 through 202.49 for current determinations.) (See also Appendix 46: 41 USC 45)

53. The Secretary of Labor may permit increase in the statutory maximum hours, i.e., 8 hours a day or 40 hours a week, but when he does so, must set overtime pay rate at not less than time and a half. (See Appendix 46: 41 USC 40)

of child and convict labor and maintenance of safe and sanitary working conditions. Penalties for violation of any of such stipulations, which are severe, include liquidated damages and debarment from further contract awards for a period of three years from date of breach.

Regulations specifically relating to the Walsh-Healy Act have been promulgated by the Labor Department's Division of Public Contracts. The Division has also issued a publication entitled "Walsh-Healy Public Contracts Act, Rulings and Interpretations" which contains many details relative to the administration and interpretation of the Act. This publication has been revised and amended through April 1953.

With the exception noted below, all contracts "for the manufacture or furnishing of materials, supplies, articles and equipment" in excess of $10,000 are subject to the Walsh-Healy Act even though they may call for the incidental erection or installation of the articles or equipment after delivery. An example of such a contract is one for the manufacture or furnishing of generators requiring prepared foundations or housing.[54]

Contracts otherwise falling within the Walsh-Healy Act but which are to be performed outside the United States, its territories or possessions are not within the purview of the Act. The regulations promulgated by the Secretary of

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54. See Appendix 48.

Labor expressly exempt from the application of the Act, contracts for materials, "no part of which will be manufactured or furnished within the geographic limits of the continental United States, Alaska, Hawaii, Puerto Rico, the Virgin Islands, or the District of Columbia". The Public Contracts Division's Rulings and Interpretations interpret this regulation to exempt contracts to be performed outside the stated areas from the Act unless their performance requires the shipment of the materials from outside to points within the stated areas, in which event compliance with the Act need be shown only as to operations within such areas. Under this interpretation, operations such as the installation but not the manufacture of generators at a site in the United States by a foreign producer are apparently subject to the provisions of the Act.[55]

The Walsh-Healy Act provides specifically that nothing therein is to be construed to modify or amend the "Buy American" Act. Section 20 of the Public Contract Division's Rulings and Interpretations indicates that where a contract is made under one of the exceptions in the "Buy American" Act, it should contain the Walsh-Healy stipulations in so far as American made goods required under the contract are concerned.

Regulations promulgated by the various branches of the armed services as well as those of the General Services

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55. See Appendix 49.

Administration contain provisions with respect to the Walsh-Healy Act. The joint regulations promulgated by the Army, Navy and Air Force[56] state that the Act applies to contracts for materials, "which are to be performed within the geographic limits of the continental United States," its territories and possessions and the District of Columbia.

On the subject of extraterritorial non-application of the Act, Army Procurement procedure provides as follows:

> "Clauses relative to the Eight-Hour Law of 1912, Nondiscrimination in Employment, the Davis-Bacon Act, the Copeland Act, the Walsh-Healy Public Contracts Act, and the Fair Labor Standards Act of 1938 were prescribed by various statutes and executive policies in order to protect American labor from various abuses. Such clauses obviously are not applicable and should not be included in contracts to be performed in foreign countries insofar as native foreign labor is concerned. Note, however, that such clauses may apply to American citizens employed under such contracts in foreign countries."

Eight-Hour Law of 1912.

The Eight-Hour Law of 1912[57] provides that all contracts to which it is applicable shall provide against the employment of any laborer or mechanic for more than eight hours in any one day on contract work. Work in excess of eight hours is permitted provided excess hours are compensated at the rate of one and one-half times basic pay.[58]

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56. See Appendix 50.
57. See Appendix 51.
58. See Appendix 51.

By its terms the law does not apply to contracts "for the purchase of supplies by the Government, whether manufactured to conform to particular specifications or not, or for such materials or articles as may usually be bought in open market . . . whether made to conform to particular specifications or not." The Attorney General many years ago interpreted the word "supplies", as used in the first portion of the quoted clause, to be synonymous with the words "materials" and "articles" as used in the second portion and, in general, to refer to items which are normally held in store or in stock.[59] In accordance with this interpretation, the Attorney General has held that where the item of equipment covered by the contract is one which is assembled from parts manufactured and held in stock, the Eight-Hour Law does not apply.[60] The matter of whether or not the law applies in particular situations is, according to the Attorney General, in general for the administrative determination of the contracting agency on the basis of the particular facts involved.

The Eight-Hour law is itself silent with respect to its territorial application. However, the Supreme Court of the United States has held the law to be inapplicable to contracts to be performed in a country or territory over

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59. 29 Op. Atty. Gen. 534, 1912.
60. 30 Op. Atty. Gen. 49, 1913.

which the United States has no direct legislative control.[61]

Regulations of the armed services all contain provisions relating to the Eight-Hour law.[62] These joint regulations provide specifically that the Eight-Hour law does not apply to "[c]ontracts (or portions thereof) for supplies in connection with which any required services are merely incidental to the sale and do not require substantial employment of laborers or mechanics." They further provide that the Eight-Hour law does not apply to any contract or portion thereof which is subject to the Walsh-Healy Act. This is in accord with Department of Labor, Public Contracts Division Rulings and Interpretations which state that where the Walsh-Healy Act applies, the Eight-Hour law is superseded.[63]

Those parts of the joint regulations which relate to construction contracts also point out that the law applies to contracts for supplies which require installation involving "a substantial amount of construction at the site, such as for heavy generators and large refrigerators."

Davis-Bacon Act of 1931.

The Davis-Bacon Act[64] requires no extended discussion since it applies to construction contracts only. Briefly,

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61. Foley Bros. v. Filardo, 336 U.S. 281 (1949)
62. See Appendix 52 and Appendix 53.
63. See Appendix 54.
64. See Appendix 55.

it applies to all construction contracts in excess of $2,000 and requires contract stipulations to the effect that all labor employed at the site of the work will be paid on a weekly basis the minimum wage determined by the Secretary of Labor to be the prevailing rate in the area for the type of work involved. Penalties for breach of such stipulations include debarment from further contract awards for a period of three years.

The Act does not apply to contracts for the manufacture or furnishing of materials, equipment or supplies although such a contract, under which the contractor is in addition obligated to perform more than an "incidental amount of installation or installation work" at the site of the work may, according to the Public Contracts Division's Rulings and Interpretations, be subject to the Davis-Bacon Act so far as labor employed to perform such installation work is concerned even though the entire contract is also subject to the Walsh-Healy Act.[65]

Convict Labor.[66]

The Armed Services Procurement regulation requires the inclusion of a clause in all contracts not subject to the Walsh-Healy Act involving the employment of labor within the United States prohibiting the contractor to employ prison

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65. See Appendix 48 and Appendix 53.

66. For the provisions of the Walsh-Healy Act relating to convict labor, see Appendix 46. For criminal provisions relating to the employment of convict labor, see Appendix 56.

labor.[67] Army Procurement procedure prescribes that the clause relative to prison labor be stricken in contracts affecting procurement outside the United States and states that it is applicable only within continental United States.[68]

Fair Labor Standards Act of 1938.

The Fair Labor Standards Act[69] is a law of general application which imposes certain labor standards which must be observed by employers, employing labor engaged in any way in interstate commerce. Thus, every employer so engaged must pay his employee wages of not less than 75¢ an hour and must not employ any such employee for a work week longer than 40 hours unless such employee receives compensation at the rate of one and one-half times his regular rate for the excess hours. Further, employers are forbidden to employ any oppressive child labor in such commerce. Producers, manufacturers and dealers are prohibited from shipping or delivering for shipment any goods produced in an establishment situated in the United States in or about which, within 30 days prior to the removal of the goods therefrom, any oppressive child labor has been employed. The Act defines

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67. See Armed Services Procurement Regulation, Section XII, Part 2, pars. 12-201 through 12-203.

68. See Army Procurement Procedure, Section VII, Part 2, par. 7-103.15.

69. See Appendix 57.

"oppressive child labor" generally to cover any employee under 16 and any employee between 16 and 18 engaged in a hazardous occupation. Extensive regulations under the Act have been promulgated by the Department of Labor's Wage and Hour Division, and with respect to child labor, by the Office of the Secretary of Labor.

It is clear from the Act and the above regulations thereunder that it has no application to labor employed in a foreign country by a foreign producer.

III

CONCLUSION

The foregoing study reveals that there exist in the United States today two policies which were adopted at different times by the Congress and the Executive Branch of our Government to promote radically different objectives. One is the historic policy of maintaining and improving the American standard of living by erecting tariff barriers and encouraging domestic consumption of American goods by such laws as the Buy American Act.[70] The other is the policy to insure the security of the United States by strengthening its allies. It is hoped to accomplish the objectives of this policy by removing, to as large a degree as possible, our restrictions on the importation of foreign products. It finds its expression in the slogan "Trade not Aid."[71]

The fact disclosed by our analysis of applicable legislation is that the American standard of living has in the past been protected by artificial barriers against the impact of cheap foreign labor.[72] The principal factual

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70. Cf. supra, pp. 3-7, 15; and Appendices 1 through 7, 9 and 20.

71. Cf. supra, pp. 5-6, 7, 8-11, 12-13, 14, 15-16; and Appendices 10 through 15, 17 through 19, 22, 35 and 38.

72. Cf. supra, f.n. 70.

question which this study poses is, to what extent will the removal of these barriers jeopardize the American standard of living?

In the years immediately following World War II, the second of the two policies had little effect on domestic industry because foreign producers were in no condition to make serious attempts to capture the American market. Today it is a different story and resurgent foreign industry may pose a serious threat to any American industry in which labor is a large factor of cost.

Prior to the war, American industry to a considerable extent was protected from ruinous foreign competition by then existing legislation. The Buy American Act was an effective instrumentality for protection because the administratively adopted 25% cost differential[73] really meant something. Since the policy of "Trade not aid" was not in existence, there was no pressure on agency heads to ignore the cost differential and base awards on public interest considerations. Moreover because of the absence of inflation the 25% differential could have been a fair measuse of the differences between foreign and domestic costs. The impact of the Reciprocal Trade Agreements Act of 1934[74] was not severe. Trade agreements with competitive

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73. Cf. supra, pp. 6-7; and Appendix 9.

74. Cf. supra, pp. 15-16; and Appendix 22.

countries were not consummated until late in the thirties and their significance was soon eliminated by the outbreak of war in 1939.[75]

Now, of course, the situation has radically changed. We have seen how post-war trade agreements have substantially reduced the rates established by the Tariff Act of 1930 and pre-war trade agreements[76] and we have noted the manner in which the policy of "trade not aid" is overriding the protection hitherto afforded by the Buy American Act.[77]

All this leads to the question of what legal procedures can affected industry now follow to protect itself. Unfortunately the answer must be that very little, if anything, can be done under existing conditions. Our study has shown that there can be little hope of success if one attempts to obtain relief by invoking the "Escape Clause" or "Peril Point" procedures of the Reciprocal Trade Agreements Act.[78]

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75. Cf. Appendix 23.

76. Cf. supra, pp. 15-17; and Appendices 20 through 28.

77. Cf. supra, pp. 7-13, 14; and Appendices 10 through 19.

78. Cf. supra, pp. 19-29; and Appendices 35 and 38 through 43.

If the cost of a domestic product exceeds that of a foreign product by more than 25%, the domestic product is automatically out.[79] If the cost differential is less than 25%, the domestic product still may be eliminated if the agency head decides that it would be in the public interest to award the contract to the foreign producer.[80] Despite any criteria which may be established, it would seem safe to say that only the strongest considerations of defense and security will override the policy of encouraging foreign imports.[81]

There exists no appeal from the adverse ruling of an agency head except to public opinion, which at present seems largely sympathetic to the policy of "trade not aid."

Respectfully submitted,

DONOVAN LEISURE NEWTON & IRVINE

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79. Cf. supra, p. 6; and Appendices 9 through 18.

80. Cf. supra, pp. 7-13; and Appendices 10 through 18.

81. Cf. supra, pp. 9-11; and Appendix 11.

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APPENDIX 1

"BUY AMERICAN" ACT

Subject Matter of Appendix: The "Buy American" Act of 1933 (March 3, 1933, c. 212, Secs. 1-5, 47 Stat. 1520; 41 U.S.C. 10a-c) as amended in 1949 (October 29, 1949, c. 787, Title VI, Sec. 633, 63 Stat. 1024; 41 U.S.C. 10d) which sets up the basic requirement of purchase of domestic supplies for public use unless cost thereof is unreasonable or their purchase is inconsistent with the public interest and prescribes contract provisions with respect thereto:

a) Act of March 3, 1933:

"Sec. 1. That when used in this title--
(a) The term 'United States,' when used in a geographical sense, includes the United States and any place subject to the jurisdiction thereof;

(b) The terms 'public use,' 'public building,' and 'public work' shall mean use by, public building of, and public work of, the United States, the District of Columbia, Hawaii, Alaska, Puerto Rico, the Philippine Islands, American Samoa, the Canal Zone, and the Virgin Islands.

Sec. 2. Notwithstanding any other provision of law, and unless the head of the department or independent establishment concerned shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be,

in the United States, shall be acquired for public use. This section shall not apply with respect to articles, materials, or supplies for use outside the United States, or if articles, materials, or supplies of the class or kind to be used or the articles, materials, or supplies from which they are manufactured are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

Sec. 3. (a) Every contract for the construction, alteration, or repair of any public building or public work in the United States growing out of an appropriation heretofore made or hereafter to be made shall contain a provision that in the performance of the work the contractor, subcontractors, material men, or suppliers, shall use only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States except as provided in section 2: Provided, however, That if the head of the department or independent establishment making the contract shall find that in respect to some particular articles, materials, or supplies it is impracticable to make such requirement or that it would unreasonably increase the cost, an exception shall be noted in the specifications as to that particular article, material, or supply, and a public record made of the findings which justified the exception.

(b) If the head of a department, bureau, agency, or independent establishment which has made any contract containing the provision required by subsection (a) finds that in the performance of such contract there has been a failure to comply with such provisions, he shall make public his findings, including therein the name of the contractor obligated under such contract, and no other contract for the construction, alteration, or repair of any public building or public work in the United States or elsewhere shall be awarded to such contractor, sub-contractors, material men, or suppliers with which such contractor is associated or affiliated, within a period of three years after such finding is made public.

Sec. 4. This title shall take effect on the date of its enactment, but shall not apply to any contract entered into prior to such effective date.

Sec. 5. If any provision of this Act, or the application thereof to any person or circumstances, is held invalid, the remainder of the Act, and the application thereof to other persons or circumstances, shall not be affected thereby."

b) Act of October 29, 1949 (The National Military Establishment Appropriation Act of 1950):

"Sec. 633. In order to clarify the original intent of Congress, hereafter, section 2 and that part of section 3(a) preceding the words 'Provided, however,' of title III of the Act of March 3, 1953 (47 Stat. 1520), shall be regarded as requiring the purchase, for public use within the United States, of articles, materials or supplies manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, unless the head of the department or independent establishment concerned shall determine their purchase to be inconsistent with the public interest or their cost to be unreasonable.

APPENDIX 2

STRATEGIC AND CRITICAL MATERIALS STOCKPILING ACT OF 1939

Subject Matter of Appendix: That portion of Section 3 of the Strategic and Critical Materials Stockpiling Act of 1939 as amended (50 U.S.C. 98 b) which specifically requires that purchases of strategic and critical materials under the Act must be made in accordance with the "Buy American" Act:

> "98b. Purchase, storage, refinement, rotation, and disposal of materials
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> "The Secretary of the Army and the Secretary of the Navy shall direct the Administrator of General Services to--
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> "(a) make purchases of strategic and critical materials with due regard to the objectives set forth in section 98 of this title and pursuant to the determinations as provided in section 98a of this title, which purchases (1) shall be made, so far as is practicable, from supplies of materials in excess of the current industrial demand and (2) shall be made in accordance with sections 10a-10c of Title 41, but may be made without regard to section 5 of Title 41. A reasonable time (not to exceed one year) shall be allowed for production and delivery from domestic sources and in the case of any such material available in the United States but which has not been developed commercially, the Secretary of the Army and the Secretary of Navy may, if they find that the production of such material is economically feasible, direct the purchase of such material without requiring the vendor to give bond;" (p. 59)

APPENDIX 3

PUBLIC HOUSING ACT OF 1937

Subject Matter of Appendix: That provision of the Public Housing Act of 1937 (Sept. 1, 1937, c.896, Sec. 6C, 50 Stat. 890; 42 U.S.C. 1406c quoted) which requires the use of funds made available under the Act in accordance with the "Buy American" Act (41 U.S.C. 10a-b):

> "(c) The use of funds made available for the purpose of this chapter shall be subject to the provisions of section 10a of Title 41, and to make such provisions effective every contract or agreement of every kind pursuant to this chapter shall contain a provision identical to the one prescribed in section 10b of Title 41."

APPENDIX 4

RURAL ELECTRIFICATION ACT OF 1936

Subject Matter of Appendix: That portion of the Rural Electrification Act of 1936 as amended (June 21, 1938, c 554, Title IV, Sec. 401, 52 Stat. 818; 7 USCA 903 note) which requires the use of domestic products on conditions similar to these in the "Buy American" Act (52 Stat. 818):

> "Sec. 401 .... In making loans pursuant to this title and pursuant to the Rural Electrification Act of 1936, the Administrator of the Rural Electrification Administration shall require that, to the extent practicable and the cost of which is not unreasonable, the borrower agree to use in connection with the expenditure of such funds, only such unmanufactured articles, materials and supplies, as have been mined or produced in the United States, and only such manufactured articles, materials and supplies as have been manufactured in the United States substantially all from articles, materials or supplies mined, produced or manufactured as the case may be, in the United States."

APPENDIX 5

MERCHANT MARINE ACT OF 1936

Subject Matter of Appendix: These provisions of the Merchant Marine Act of 1936 which require the use of domestic products in the construction (June 29, 1936, c 858, Title V, Sec. 505(a), 49 Stat. 1998, 46 U.S.C. 1155(a) or operation (ibid, Title VI, Sec. 606, 49 Stat. 2004; 46 U.S.C. 1176) of vessels the construction or operation of which is subsidized under the Act:

(a) Construction (49 Stat. at p. 1998):

> "Sec. 505 (a) All construction in respect of which a subsidy is allowed under this title shall be performed in a shipyard within the continental limits of the United States as the result of competitive bidding, after due advertisement, with the right reserved in the applicant to reject, and in the Commission to disapprove, any or all bids. In all such construction the shipbuilder, subcontractors, material-men, or suppliers shall use, so far as practicable, only articles, materials and supplies of the growth, production, or manufacture of the United States as defined in paragraph K of section 401 of the Tariff Act of 1930."

(b) Operation (49 Stat. at pp. 2004 and 2005):

> "Sec. 606. Every contract for an operating-differential subsidy under this title shall provide ... (7) that whenever practicable, the operator shall use only articles, materials, and supplies of the growth, production, and manufacture of the United States, as defined in section 505a herein, except when it is necessary to purchase supplies and equipment outside the United States to enable such vessel to continue and complete for voyage, and the operator shall perform repairs to subsidized vessels within the continental limits of the United States, except in an emergency."

APPENDIX 6

MISCELLANEOUS STATUTORY DOMESTIC PREFERENCE PROVISIONS

Subject of Appendix: Statutes of relatively minor importance to the survey which contain domestic preference provisions of varying types:

(a) Purchases for Houses of Congress (2 U.S.C. 109):

"Sec. 109. American goods to be preferred in purchases for Senate and House of Representatives. The Secretary of the Senate and the Clerk of the House of Representatives shall, in disbursing the public moneys for the use of the two Houses, respectively, purchase only articles the growth and manufacture of the United States, provided the articles required can be procured of such growth and manufacture upon as good terms as to quality and price as are demanded for like articles of foreign growth and manufacture. (R.S. Sec. 69.)" (p. 42)

(b) Purchases for the White House (3 U.S.C. 110):

"All furniture purchased for the use of the President's House shall be, as far as practicable, of domestic manufacture ... June 25, 1948, c. 644, Sec. 1, 62 Stat. 672"

(c) Post Office Supplies (5 U.S.C. 366):

"... in purchasing such supplies preference shall be given to articles of domestic production and manufacture, conditions of price and quality being equal ... April 28, 1904, c. 1759, Sec. 3, 33 Stat. 440."

(d) Naval Hemp (34 U.S.C. 576):

"Hemp. All hemp, or preparations of hemp, used for naval purposes by the Government of the United States, shall be of American growth or manufacture, when the same can be obtained of as good quality and at as low a price as foreign hemp. (R.S. Sec. 3725)."

(e) Defense Department food, clothing, cotton and wool (Defense Appropriations Act of 1953) July 10, 1952, c. 630, Title III, 66 Stat. 517, 521):

". . . Provided, That no part of this or any other appropriation contained in this Act shall be available for the procurement of any article of food, clothing, cotton or wool (whether in the form of fiber or yarn or contained in fabrics, materials, or manufactured articles) not grown, reprocessed, reused, or produced in the United States or its possessions, except to the extent that the Secretary of the Department concerned shall determine that a satisfactory quality and sufficient quantity of any articles of food or clothing or any form of cotton or wool grown, reprocessed, reused, or produced in the United States or its possessions cannot be procured as and when needed at United States market prices and except procurements by vessels in foreign waters and emergency procurements or procurements of perishable foods by establishments located outside the continental United States, except the Territories of Hawaii and Alaska, for the personnel attached thereto: Provided further, That nothing herein shall preclude the procurement of foods manufactured or processed in the United States or its possessions."

APPENDIX 7

EXCERPTS FROM CONGRESSIONAL DEBATE ON THE "BUY AMERICAN" ACT

Subject Matter of Appendix: Excerpts from statements of proponents of the original "Buy American" bill made on the floor of the Senate in support of the bill. These statements show the intended purposes of the bill were twofold: to retaliate against similar existing foreign measures and to sustain United States employment in time of economic stress.

Excerpt 1 (76 Cong. Rec., Vol. 3, p. 3175, 72nd Cong., 2nd Sess., Feb. 2, 1933):

> "Mr. JOHNSON. . . . . some things have been said that make it necessary, perhaps, for me to indicate why this particular measure is presented and exactly its genesis.
>
> It happened that a month or more ago certain manufacturers in the State of California, and some in the State of Pennsylvania, called upon me in reference to bids that were to be opened on the 3d day of February at the Boulder Dam - bids for turbines, generating machinery, and the like. They explained to me their fear - a fear that subsequently, from my investigations, I thought was well founded - that they would be unable to compete with the machinery that was the product of their works, wherein their men were employed, with bids that would come from Germany and perhaps another nation of Europe, too. They presented, and presented forcefully, that at this time, when they were endeavoring to continue their employment, it would be unwise and it would be ungenerous of the Government of the United States to permit its tax payers' money to be awarded by a contract with foreign bidders for machinery, and so forth, manufactured abroad for use in that great undertaking.

They did not object if there was great disproportion between the bids; but if their bid was 1 per cent or 2 per cent or 3 per cent or 5 per cent higher than the bids from abroad, they thought that it was an outrageous thing that their money that they put up in taxes with the Government of the United States should be paid out upon a governmental project - paid out in the amount of six millions, or thereabouts, to any foreign country.

That was the genesis of the amendment I originally presented. The amendment I presented to the deficiency bill was, on a point of order, ruled as not appropriate at that time. Thereupon I gave the notice that is required under the rules that would bring the amendment up here. In the interim there came from the House what is known as the Wilson bill, passed over there by an overwhelming vote, which dealt with the same subject matter, and perhaps in a little more detail than the amendment that I had presented originally to the deficiency bill.

That bill, the Wilson bill, passing the House overwhelmingly, came to the Commerce Committee, where it was considered and amended in order that no injustice would be done to anybody in the United States or any manufacturer here, and the Wilson bill, thus amended, is practically the amendment that is presented now to be acted upon by the Senate.

It is necessary that we act in this matter, because it will be impossible in the present legislative jam in the Senate to pass the Wilson bill. So we seek under our rules by a suspension to add that bill to the pending measure, with the amendments put upon it by the Committee on Commerce, and to have it enacted into law.

Mr. President, there can be no question as to the justice of such a measure. I have before me the orders which have been made in Britain from 1920 to 1933. Every order for every public construction, every order for every road construction, contains this clause:

> That all materials required for the assisted works will be of British origin and all manufactured articles of British manufacture.

Subject to certain provisions, which are then stated.

Every order made in Britain relative to public works contains this provision. What we ask is that in relation to our public works built with public money there shall be accorded to Americans the same privilege and the same right.

In this particular conjunction of affairs it seems to me that it should not require debate, it should not require a moment's time, to say that when the Government is undertaking a project, when it is undertaking to do certain work, then the people's money shall be expended in this country upon American manufactures and the produce that is grown in this country.

Now, answering my friend the Senator from Wisconsin, see how tender we have been of anyone in this country who might think that he would be injured or be hurt at all. The amendment reads:

> This section shall not apply with respect to articles, materials, or supplies for use outside the United States, or to be used for experimental or scientific purposes, or if articles, materials, or supplies of the class or kind to be used or the articles, materials, or supplies from which they are manufactured are not mined, produced, or manufactured, as the case may be, in the United States in commercial quantities and of a satisfactory quality.

Not only that, but, at the instance of one of the departments, we placed in the bill, too, the provision that if the head of a department or independent establishment making a contract shall find that in respect to some particular article, material, or supply it is impracticable to make such requirement, or that it would unreasonably increase the cost, an exception shall be noted in the specifications as to that particular article, material, and so forth, and then the Government may proceed.

Everyone is protected by this bill. The only fault in it is that it is not sufficiently drastic, and that fault is perhaps one for which I am responsible, because of the tenderness I felt for any man in business in the United States to-day, or who

might, in business in the United States, deal with the Government of the United States and in some small degree in those things which come from abroad.

The bill, therefore, is just, the bill is fair, the bill seeks to take care of our own. Where every other government on earth is taking care of its own, why should we not at least partially take care of our own?"

Excerpt 2 (Ibid, p. 3254, Feb. 3, 1933):

"Mr. VANDENBERG. . . .

It occurs to me that in a time like this, when we are beset upon all sides with an almost inescapable and unavoidable responsibility to provide employment for unemployed American people, we have a right to draw the line, without any 'or' in it anywhere, in defense of American industry and American employment, when we are spending American tax funds. Why have an American make-work program which makes work in Europe or in Asia? I am not blind to the need for export trade. I am speaking solely of Government funds and their expenditure.

Mr. President, the American Treasury is not the world's community chest, although too frequently it seems to be looked upon in that aspect; and at this moment, with a workable proposition for domestic protection, submitted by the Senator from California, I submit that the Senate should stand upon the proposition as it is submitted and make it a complete success.

. . . . .

This is not rightfully a general tariff debate, although Democrats across the aisle would make it such. So far as tariffs go, the depreciated currencies of the world have left us almost defenseless. This lapse in protection needs correction. If this proposal submitted by the Senator from California is a step in protective directions, so much the better. But primarily it is an employment measure conceived in the notion that American tax money should sustain American labor in a moment of American crisis and American exigency. . . ."

APPENDIX 8

EXECUTIVE ORDER NOS. 10387 AND 10476; REORGANIZATION PLAN NO. 7 OF 1953

Subject Matter of Appendix: Excerpts from Reorganization Plan No. 7 of 1953 (Aug. 4, 1953, 18 F.R. 4541), Executive Order No. 10476 (Aug. 4, 1953, 18 F.R. 4537) and Executive Order No. 10387, (Aug. 25, 1952, 17 F.R. 7799) which together show the abolition of MSA and the transfer of its functions to F.O.A., the delegation of presidential powers under the various foreign aid statutes to F.O.A., and the prior exemption of functions under these statutes from application of various laws otherwise applicable to government contracts, including the "Buy American" Act of 1933. Note that authority for such exemption derives from a June 20, 1952 amendment to the Mutual Security Act of 1951 (c. 449, Sec. 7m, 66 Stat. 146; 22 USCA 1675a) which provided for the application of the provisions of Section 119 of the Economic Cooperation Act of 1948 (22 USC 1517) to the performance of functions under the Mutual Security Act of 1951 as amended. The E.C.A. provision is as follows (22 USC 1517):

> "When the President determines it to be in furtherance of the purposes of this subchapter, the functions authorized under this subchapter may

be performed without regard to such provisions of law regulating the making, performance, amendment, or modification of contracts and the expenditure of Government funds as the President may specify."

(a) Excerpts from Reorganization Plan No. 7 of 1953:

"REORGANIZATION PLAN NO. 7 OF 1953

Prepared by the President and Transmitted to the Senate and the House of Representatives in Congress Assembled June 1, 1953, Pursuant to the Provisions of the Reorganization Act of 1949, Approved June 20, 1949, as Amended

FOREIGN OPERATIONS ADMINISTRATION

SECTION 1. Establishment of Foreign Operations Administration. (a) There is hereby established a new agency which shall be known as the Foreign Operations Administration, hereinafter referred to as the 'Administration.'

. . . . . .

SEC. 2. Transfer of functions to the Director. There are hereby transferred to the Director:

(a) All functions vested by the Mutual Security Act of 1951, as amended, or by any other statute in the Director for Mutual Security provided for in section 501 of the Act, or in the Mutual Security Agency created by that Act, or in any official or office of that Agency, including the functions of the Director for Mutual Security as a member of the National Security Council.

(b) All functions vested by the Mutual Defense Assistance Control Act of 1951 in the Administrator created by that Act.

(c) The function vested by section 6 of the Yugoslav Emergency Relief Assistance Act of 1950 in the Secretary of State.

SEC. 3. Institute of Inter-American affairs. The Institute of Inter-American Affairs, together with its functions, is hereby transferred to the Administration. All functions vested by the Institute of Inter-American Affairs Act in the Secretary of State are hereby transferred to the Director. Functions with respect to serving as employees of the said Institute or as members of the board of directors thereof, including eligibility, as the case may be, to be detailed as such employees or to serve as such members, are hereby transferred from the officials and employees of the Department of State to the officials and employees of the Administration. The Institute shall be administered subject to the direction and control of the Director.

SEC. 4. National Advisory Council. The Director shall be a member of the National Advisory Council on International Monetary and Financial Problems (22 U.S.C. 286b).

. . . . . .

SEC. 8. Abolitions. (a) There are hereby abolished:

(1) The offices of Director for Mutual Security and Deputy Director for Mutual Security, provided for in sections 501 and 504, respectively, of the Mutual Security Act of 1951, as amended (including the organization in the Executive Office of the President known as the Office of the Director for Mutual Security).

(2) The Mutual Security Agency.

(3) The title of Administrator provided for in the Mutual Defense Assistance Control Act.

(4) The four positions provided for in section 406 (e) of the Mutual Defense Assistance Act of 1949, as amended.

(5) The office of Administrator and Deputy Administrator for Technical Cooperation, provided for in section 413 (a) of the Act for International Development, as amended, together with the functions vested in the Administrator by the said section 413 (a), as amended.

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(6) The offices of the Special Representative in Europe, and Deputy Special Representative in Europe, provided for in section 504 (a) of the Mutual Security Act of 1951, as amended. The abolition of the said offices of Representative, and Deputy Representative shall become effective on September 1, 1953 (unless a later date is required by the provisions of section 6 (a) of the Reorganization Act of 1949, as amended).

(b) The Director shall wind up any outstanding affairs of the aforesaid abolished agencies and offices not otherwise provided for in this reorganization plan." (18 F.R. 4541-2)

(b) Excerpts from Executive Order No. 10476:

"EXECUTIVE ORDER 10476

ADMINISTRATION OF FOREIGN AID AND FOREIGN INFORMATION FUNCTIONS

By virtue of the authority vested in me by the statutes referred to in section 101 of this order, and by section 301 of title 3 of the United States Code and Reorganization Plans Nos. 7 and 8 of 1953, and as President of the United States and Commander in Chief of the armed forces of the United States, it is hereby ordered as follows:

PART I. FOREIGN AID

SECTION 101. Delegation of certain functions of the President. (a) Except as otherwise provided in this order, the functions conferred upon the President by the following-designated laws are hereby delegated to the Director of the Foreign Operations Administration: the Mutual Security Act of 1951, 65 Stat. 373, as amended; the Mutual Defense Assistance Act of 1949, 63 Stat. 714, as amended (22 U.S.C. 1571-1604); the act of May 22, 1947, 61 Stat. 103, as amended (22 U.S.C. 1401-1408); the Mutual Defense Assistance Control Act of 1951, 65 Stat. 644 (22 U.S.C. 1611-1613c); and those provisions of the Economic Cooperation Act of 1948, 62 Stat. 137, as amended (22 U.S.C. 1501 et seq.), which are continued in effect by section 503 of the Mutual Security Act of 1951, as amended.

(b) There are hereby excluded from the functions delegated by section 101 (a) of this order:

(1) The functions conferred upon the President by the laws referred to in section 101 (a) of this order with respect to the appointment of officers required to be appointed by and with the advice and consent of the Senate, the transmittal of periodic or special reports to the Congress, and the termination or withdrawal of assistance.

(2) The functions conferred upon the President with respect to findings, determinations, certification, agreements, transfers of funds, or directives, as the case may be, by sections 101 (a) (1), 101 (b), 202, 302 (a), 303 (a) (last two sentences), 401, 503 (a) (3), 507 (except as provided in Part III hereof), 511, 513, 530, 532, 540, 542, 550 (b), and 550 (e) of the Mutual Security Act of 1951, as amended; sections 303, 402, 407 (b) (2), 408 (f), and 411 (b) of the Mutual Defense Assistance Act of 1949, as amended; sections 105 (c), 111 (b) (2) (first clause), and 119 of the Economic Cooperation Act of 1948, as amended; and sections 103 (b), 104, 203, and 301 of the Mutual Defense Assistance Control Act of 1951.

(c) Funds which have been or may be appropriated or otherwise made available to the President to carry out the laws referred to in section 101 (a) hereof, and section 12 of the Mutual Security Act of 1952 (66 Stat. 151), shall be deemed to be allocated to the Director of the Foreign Operations Administration without any further action by the President, and the said funds may be allocated by the Director of the Foreign Operations Administration to any agency, department, establishment, or wholly-owned corporation of the Government for obligation or expenditure thereby, consistent with applicable law, subject, however, to the reservation of functions relating to transfer of funds set forth in section 101 (b) (2) hereof.

SEC. 102. Interrelationship of Director and Secretary of Defense. (a) Consonant with section 501 (a) of the Mutual Security Act of 1951, as amended, the Secretary of Defense shall exercise the responsibility and authority vested in him by section 506 (a) of the said Act, as amended, subject to coordination, direction, and supervision by the Director of the Foreign Operations Administration.

(b) The Secretary of Defense shall keep the Director of the Foreign Operations Administration fully and currently informed of all matters, including prospective action, relating to the establishment of priorities under section 506 (b) and the furnishing of military items under section 506 (c) of the Mutual Security Act of 1951, as amended.

. . . . . .

SEC. 104. Successor agencies. (a) Except as may be otherwise provided in this order, the Foreign Operations Administration and the Director of the Foreign Operations Administration are hereby made the successors, respectively, of the Mutual Security Agency and the Director for Mutual Security.

(b) Except in instances wherein the provisions concerned are for any reason inapplicable as of the effective date of Reorganization Plan No. 7 of 1953, each reference in any prior Executive order to the Mutual Security Agency or the Director for Mutual Security is hereby amended to refer to the Foreign Operations Administration and the Director of the Foreign Operations Administration, respectively.

. . . . . .

SEC. 105. Redelegation. The functions delegated to the Director of the Foreign Operations Administration by the provisions of this Part shall be deemed to include the authority to redelegate the functions so delegated.

. . . . . .

PART IV. GENERAL PROVISIONS

SEC. 401. Coordination of foreign policy. The Secretary of State, the Director of the Foreign Operations Administration, and the Director of the United States Information Agency shall establish and maintain arrangements which will insure that the programs under the supervision of the latter two officials are carried out in conformity with the established foreign policy of the United States.

. . . . . .

SEC. 403. Prior orders and actions.

. . . . . .

(d) All orders, regulations, rulings, certificates, directives, agreements, contracts, delegations, determinations, and other actions of any officer or agency of the Government relating to any function affected by this order shall remain in effect except as they are inconsistent herewith or are hereafter amended or revoked under proper authority.

SEC. 404. Definition. As used in this order, the word 'functions' embraces duties, powers, responsibilities, authority, and discretion.

SEC. 405. Effective date. This order shall become effective on August 1, 1953.

DWIGHT D. EISENHOWER

THE WHITE HOUSE,
August 1, 1953." (18 F.R. 4537-40)

(c) Executive Order No. 10387 (in full):

"EXECUTIVE ORDER 10387

SPECIFICATION OF LAWS FROM WHICH CERTAIN FUNCTIONS AUTHORIZED BY THE MUTUAL SECURITY ACT OF 1951, AS AMENDED, SHALL BE EXEMPT

By virtue of the authority vested in me by section 532 of the Mutual Security Act of 1951, as added by section 7 (m) of the Mutual Security Act of 1952 (Public Law 400, approved June 20, 1952, 66 Stat. 146), it is hereby determined that, to the extent hereinafter indicated, the performance of functions authorized by the said Mutual Security Act of 1951, as amended (including the performance of functions authorized by the Act for International Development, as amended, the Institute of Inter-American Affairs Act, as amended, and the Mutual Defense Assistance Act of 1949, as amended), without regard to the laws specified in the lettered subdivisions of sections 1, 2, and 3 of this order will further the purposes of the said Mutual Security Act of 1951, as amended.

SEC. 1. With respect to functions authorized by section 503 (b) of the Mutual Security Act of 1951, as amended (22 U.S.C. 1654 (b)), the Act for International Development, as amended (22 U.S.C. 1557 et seq.), and the Institute of Inter-American Affairs Act, as amended (22 U.S.C. 281 et seq.):

(a) The act of March 26, 1934, c. 90, 48 Stat. 500, as amended (15 U.S.C. 616a).

(b) Section 3648 of the Revised Statutes, as amended, 60 Stat. 809 (31 U.S.C. 529).

(c) Section 305 of the act of June 30, 1949 (the Federal Property and Administrative Services Act of 1949), c. 288, 63 Stat. 396 (41 U.S.C. 255).

(d) Section 3709 of the Revised Statutes, as amended (41 U.S.C. 5).

(e) Section 3710 of the Revised Statutes (41 U.S.C. 8).

(f) Section 2 of the act of March 3, 1933, c. 212, 47 Stat. 1520 (41 U.S.C. 10a).

(g) Section 3735 of the Revised Statutes (41 U.S.C. 13).

(h) Section 901 of the act of June 29, 1936, c. 858, 49 Stat. 2015 (46 U.S.C. 1241).

SEC. 2. With respect to purchases authorized to be made outside the continental limits of the United States under the Mutual Defense Assistance Act of 1949, as amended (22 U.S.C. 1571 et seq.), sections 503 (b) and 506 of the Mutual Security Act of 1951, as amended, the Act for International Development, as amended, and the Institute of Inter-American Affairs Act, as amended:

(a) Section 10 (1) of the act of July 2, 1926, c. 721, 44 Stat. 787, as amended (10 U.S.C. 310 (1)).

(b) Section 4 (c) of the act of February 19, 1948 (the Armed Services Procurement Act of 1947), c. 65, 62 Stat. 23, as amended, 65 Stat. 700 (41 U.S.C. 153 (c)).

(c) Section 304 (c) of the act of June 30, 1949 (the Federal Property and Administrative Services Act of 1949), c. 288, 63 Stat. 395, as amended, 65 Stat. 700 (41 U.S.C. 254 (c)).

(d) Section 1301 of the act of March 27, 1942 (the Second War Powers Act, 1942), c. 199, 56 Stat. 185 (50 U.S.C. App. 643).

SEC. 3. With respect to functions performed in Burma and Indonesia under the Act for International Development, as amended:

(a) Section 5 (c) (2) of the act of July 16, 1914, c. 141, 38 Stat. 508, as amended, 60 Stat. 810 (5 U.S.C. 78 (c) (2)).

This order supersedes Executive Order No. 9943 of April 9, 1948, 13 F.R. 1975, entitled 'Providing for Carrying out the Foreign Assistance Act of 1948'.

HARRY S. TRUMAN

THE WHITE HOUSE,

August 25, 1952." (17 F.R. 7799)

APPENDIX 9

PROCUREMENT DIVISION CIRCULAR LETTER NOS. 6, 37 AND B-61

Subject Matter of Appendix: Early Circular Letters of the Branch of Supply, Treasury Department Procurement Division which show the origin of the present 25% differential presently used to determine whether cost is unreasonable within the meaning of the "Buy American" Act; and the early method of treating duty in the cost computation:

(a) Circular Letter No. 6:

TREASURY DEPARTMENT
Procurement Division

Washington

In Reply Address
BRANCH OF SUPPLY
And Refer to File No.

March 31, 1934

Circular Letter No. 6

TO THE HEADS OF ALL EXECUTIVE DEPARTMENTS AND INDEPENDENT ESTABLISHMENTS:

SUBJECT: Purchases by Departments in compliance with the "Buy American Law," approved March 3, 1933

WHEREAS TITLE III, Section 2 of the act of March 3, 1933 (Public No. 428, 47 Stat. 1517) provides that:

"Notwithstanding any other provision of law, and unless the head of the department or independent establishment concerned shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only such unmanufactured articles,

materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, shall be acquired for public use;"

It is hereby ordered that, in deciding the reasonableness of the cost of domestic products, the following differential scale shall be applied in favor of domestic articles, materials or supplies:

Up to - - -	$ 50.00 - - - - - -	100%
Up to - - -	100.00 - - - - - -	75%
Up to - - -	500.00 - - - - - -	50%
Up to - - -	1000.00 - - - - - -	40%
Up to - - -	5000.00 - - - - - -	30%
Over - - -	5000.00 - - - - - -	25%

In all other matters concerning the public interest in relation to the purchase of domestic articles, materials or supplies, the decision shall be made by the head of the department or establishment concerned.

APPROVED: March 27, 1934
STEPHEN B. GIBBONS
Acting Secretary of the Treasury

C. J. PEOPLES
Director of Procurement

(b) Circular Letter No. 37:

TREASURY DEPARTMENT
Procurement Division

June 20, 1934

Branch of Supply

Circular No. 37

TO THE HEADS OF ALL DEPARTMENTS AND ESTABLISHMENTS:

SUBJECT: Purchases by Departments in compliance with the "Buy American Law," approved March 3, 1933.

Circular Letter No. 6, dated March 31, 1934, issued by the Director of Procurement, on the above subject, is hereby cancelled and the following substituted therefor:

WHEREAS Title III, Section 2 of the Act of March 3, 1933 (Public No. 428, 47 Stat. 1520) provides that:

"Notwithstanding any other provision of law, and unless the head of the department or independent establishment concerned shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, shall be acquired for public use;"

It is hereby directed that, in deciding the reasonableness of cost of domestic products, the following differential scale shall be applied in favor of domestic articles, materials, or supplies:

On purchases where the foreign bid is $100 or less, a differential of 100% will apply,

On purchases where the foreign bid exceeds $100, a differential of 25% will apply.

The above differentials are to be applied to purchases within the continential limits of the United States, exclusive of Alaska.

The determination of reasonableness of cost of all domestic products in Alaska and outside the continental limits of the United States will be left to the discretion of the heads of departments or establishments concerned.

The above applies only to reasonableness of cost of domestic products. In all matters concerning the public interest in relation to the purchase of domestic articles, materials, or supplies, the decision shall be made by the head of the department or establishment concerned.

C. J. PEOPLES
Director of Procurement

(c) Circular Letter No. B-61:

T R E A S U R Y D E P A R T M E N T
BUREAU OF FEDERAL SUPPLY
WASHINGTON 25

Office of the Director October 1, 1947

CIRCULAR LETTER B-61

TO: Heads of Departments and Establishments

FROM: Clifton E. Mack, Director, Bureau of Federal Supply

SUBJECT: Preference in Purchase of Domestic Products

Title III, section 2, of the Act of March 3, 1933 (47 Stat. 1520; 41 U.S.C. 10a), the so-called "Buy American" Act, provides in part that:

"Notwithstanding any other provision of law, and unless the head of the department or independent establishment concerned shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, shall be acquired for public use . . ."

In applying the exception which permits purchase of products of foreign origin if the cost of domestic products is unreasonable, the following differentials shall be applied by Executive departments and independent establishments in favor of domestic products to be delivered in the continental United States:

(a) Where the cost of the foreign product exceeds $100, a differential of 25%;

(b) Where the cost of the foreign product is $100 or less, a differential of 100%

When the cost is enhanced by duty paid the United States, the differential shall be 25% or 100%, as the case may be, of the cost exclusive of duty. The cost of the domestic produce is unreasonable whenever it exceeds the cost of the foreign product including duty plus the amount of the differential.

This order does not prejudice the authority of any department or independent establishment to reject a bid for a domestic product as unreasonable, or negotiate for a lower price, for any reason other than the comparative cost of a foreign product. In appropriate cases, the heads of department or independent establishments concerned may determine that the public interest is inconsistent with purchase of a domestic product, for any reason other than the comparative cost of a foreign product. The term "domestic product" means a product entitled to preference under the "Buy American" Act.

/signed/

Clifton E. Mack
Director, Bureau of Federal Supply

APPENDIX 10

GENERAL SERVICES ADMINISTRATION REGULATION RE "BUY AMERICAN" ACT

Subject Matter of Appendix: Regulations of the General Services Administration currently in force which prescribe policy for administration of the "Buy American" Act (G.S.A. Regs., Title 1, Part 2, par. 201.02, November 17, 1952):

"201.02 Preference in Purchase of Domestic Products. In accordance with the provisions of Title III, section 2 of the so-called 'Buy American' Act (47 Stat. 1520; 41 USC 10a), as amended, departments and independent establishments of the Federal Government shall be governed by the following:

"a. In applying the exception which permits purchase of products of foreign origin if the cost of domestic products (products entitled to preference under the 'Buy American' Act) is unreasonable, the following differentials shall be applied in favor of domestic products to be delivered in the continental United States:

1. Where the cost of the foreign product exceeds $100.00, a differential of 25%;

2. Where the cost of the foreign product is $100.00 or less, a differential of 100%.

When the cost is enhanced by duty paid the United States, the differential shall be 25% or 100%, as the case may be, of the cost exclusive of duty. The cost of the domestic product shall be deemed unreasonable whenever it exceeds the cost of the foreign product including duty plus the amount of the differential.

"b. The provisions of this subsection do not prejudice the authority of any department or independent establishment to reject a bid for a domestic product as unreasonable, or negotiate for a lower price, for any reason other than the comparative cost of a foreign product.

"c. In appropriate cases, the head of the department or independent establishment concerned may determine that the public interest is inconsistent with purchase of a domestic product for any reason other than the comparative cost of a foreign product."

APPENDIX 11

ARMED SERVICES PROCUREMENT REGULATION RE 'BUY AMERICAN' ACT

Subject Matter of Appendix: Joint regulations of the Army, Navy and Air Force (ASPR) currently in force which prescribe policy to be followed by those agencies in administration of the "Buy American" Act (ASPR, Section VI, Part 1, pars. 6-000 through 6-108) and clauses to be used in contracts with respect thereto (ASPR, Section VII, Part 1, par. 7-103.14).

(a) Pars. 6-000 through 6-108:

"SECTION VI

FOREIGN PURCHASES

6-000 Scope of Section. This section deals with (a) statutory prohibitions on foreign purchases, (b) purchases from Canadian sources, and (c) duty and customs.

Part I - Buy American Act and Other Statutory Prohibitions on Foreign Purchases

6-101 Statutory Prohibitions. Each Department, in connection with the procurement of supplies and in connection with construction work, shall comply with the provisions of the Buy American Act (41 U.S. Code 10a-d) and with such other prohibitions on foreign purchases as may be contained in annual appropriation acts or in acts authorizing appropriations.

6-102. Prohibitions of Buy American Act. The Buy American Act prohibits, within terms of

its applicability and subject to the authority to grant certain exceptions (set forth in paragraphs 6-103 and 6-104 respectively), the acquisition for public use by any Department, or the use in connection with the performance of any Department contract for the construction, alteration, or repair of any public building or public work, of (i) unmanufactured supplies unless mined or produced in the United States, and (ii) manufactured supplies unless manufactured in the United States substantially all from supplies mined, produced, or manufactured in the United States.

6-103 Applicability of Buy American Act.

6-103.1 Kinds of Supplies. The Buy American Act applies to raw materials and manufactured products. However, in the case of manufactured products, the Buy American Act applies to the end product itself and to the components directly furnished for that end product, but does not apply to supplies that are used in the manufacture of any such component.

6-103.2 Origin of Supplies Used in Manufactured Supplies. The prohibitions of the Buy American Act do not apply to supplies manufactured in the United States when such supplies are manufactured 'substantially all' from supplies mined, produced, or manufactured in the United States. Supplies shall be considered to be manufactured 'substantially all' from United States supplies whenever the cost of foreign supplies used in such manufacture constitutes 25 per cent or less of the cost of all supplies used in such manufacture. In this connection, suppliers shall accompany their bids or quotations contemplating the furnishing or use of foreign supplies (not excepted pursuant to paragraph 6-105) with a certificate substantially as follows:

> 'Not to exceed --- percent in cost of the materials, used directly in the manufacture of the supplies offered, is of foreign origin.'

Any supplies of an unknown origin used in such manufacture shall be considered to be foreign supplies.

6-103.3 Geographical Application. The Buy American Act applies only to (i) supplies for public use within the United States and (ii) construction work on public buildings or public works within the United States. As used in the Buy American Act and in this section, the term 'United States' includes the United States, its territories and possessions.

6-103.4 Nonavailability of Supplies or Materials. The Buy American Act does not apply (i) to supplies which are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or (ii) to such materials, from which the supplies to be used are manufactured, as are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, except that this does not permit delivery of supplies manufactured outside the United States if such supplies are manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality. This paragraph 6-103.4 shall be applied and used only in accordance with procedures prescribed by each respective Department.

6-104 Authority to Grant Exceptions to Buy American Act. The Secretary of each Department is authorized by the Buy American Act to grant exceptions thereto when application of the Buy American Act -

(a) would be inconsistent with the public interest, or

(b) would unreasonably increase the cost, or

(c) in connection with construction or repair work, would be impracticable or would unreasonably increase the cost;

provided that, in the case of supplies to be used in construction or repair work, any exception granted under this paragraph shall be noted in the specifications and a public record made of the supporting findings.

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6-105 Supplies Excepted From Buy American Act. The Secretaries of the three Departments have administratively determined, in accordance with the provisions of paragraphs 6-103.4 and 6-104, that the following supplies may be procured or used by any Department without regard to the country of origin:

(a) the articles, materials, and supplies listed at the end of this Part 1 of Section VI; and

(b) articles, materials, and supplies manufactured in the United States notwithstanding the fact that there is used in such manufacture any of the articles, materials, or supplies listed at the end of this Part 1 of Section VI.

6-105.1 Exceptions Based on Unreasonable Cost. It has also been administratively determined by the Secretaries of the three Departments, in accordance with the provisions of paragraph 6-104, that the cost would be unreasonable, and that therefore the prohibitions of the Buy American Act would not apply, when the lowest net cost of United States supplies exceeds the lowest net cost of foreign supplies, including duty, by 25 percent or more (100 percent in the case of foreign supplies costing $100 or less). However, in any case involving a differential of less than 25 percent, where the Contracting Officer, because of the amount involved, considers the differential to be unreasonable, he may submit the matter for consideration to the Secretary of the Department concerned; further, in any case involving a differential of less than 25 percent, and when the total amount of the lowest acceptable foreign proposal exceeds $25,000, the Contracting Officer shall submit the matter for consideration to the Secretary of the Department concerned.

6-106 Other Statutory Prohibitions on Foreign Purchases.

6-106.1 Prohibition of Annual Appropriation Acts. Annual appropriation acts for the Departments of the Army, Navy, and Air Force customarily

prohibit the use of any funds, appropriated by such acts, for the procurement of any article of food or clothing not grown or produced in the United States, its territories or its possessions. Such acts have usually provided certain exceptions to this general prohibition, but the scope of such exceptions has varied in each annual appropriation act. Reference should be made to the current appropriation act and to the procedures prescribed by each respective Department for the details of the available exceptions. It has been determined by the Secretary of Each Department that all the articles of food and clothing contained in the list set forth at the end of this Part 1 of Section VI are exempt from this general prohibition. The prohibition contained in annual appropriation acts is in addition to the restrictions of the Buy American Act.

6-107 References in Contractual Documents. Formal solicitations of bids and informal requests for quotations shall refer to the Buy American Act and any other statutory prohibitions on foreign purchases whenever applicable to the supplies being procured, and information as to excepted supplies shall be made available to suppliers upon request. All contracts for supplies shall contain, with respect to the Buy American Act and any other statutory prohibitions on foreign purchases, such provision as is required by this regulation and by procedures prescribed by each respective Department.

6-108 Violation of Buy American Act Provision in Construction Contracts. The Secretary of any Department, upon finding that in the performance of a construction contract there has been a failure to comply with the Buy American Act provision, shall make public his findings (including therein the name of the contractor obligated under such contract) and no other contract for the construction, alteration, or repair of any public building or public work in the United States or elsewhere shall be awarded to such contractor, subcontractors, materialmen, or suppliers with which such contractor is associated or affiliated, within a period of three years after such finding is made public. The name of any such noncomplying contractor or bidder shall be placed on each Department's

list of ineligible contractors and disqualified bidders referred to in paragraph 1-303."

Note: Appearing after par. 6-108 are a list of supplies to be procured for public use and a list of supplies to be used in the construction, alteration or repair of any public building or work, which have been administratively determined per par. 6-105, supra, to be excepted from the Buy American Act. These lists are not reproduced. The supplies listed are for the most part basic raw materials such as copper, lead, zinc, etc., some of which are used in the production of electrical equipment. No electrical equipment as such is, however, included.

(b) Par. 7-103.14:

"7-103.14 Buy American Act.

BUY AMERICAN ACT

The Contractor agrees that there will be delivered under this contract only such unmanufactured articles, materials and supplies (which term 'articles, materials and supplies' is hereinafter referred to in this clause as 'supplies') as have been mined or produced in the United States, and only such manufactured supplies as have been manufactured in the United States substantially all from supplies mined, produced, or manufactured, as the case may be, in the United States. Pursuant to the Buy American Act (41 U.S. Code 10a-d), the foregoing provision shall not apply (i) with respect to supplies excepted by the Secretary from the application of that Act, (ii) with respect to supplies for use outside the United States, or (iii) with respect to the supplies to be delivered under this contract which are of a class or kind determined by the Secretary or his duly authorized representative not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or (iv) with respect to such

supplies, from which the supplies to be delivered under this Contract are manufactured, as are of a class or kind determined by the Secretary or his duly authorized representative not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality: Provided, That this exception (iv) shall not permit delivery of supplies manufactured outside the United States if such supplies are manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality."

APPENDIX 12

ARMY PROCUREMENT PROCEDURE RE "BUY AMERICAN" ACT

Subject Matter of Appendix: Supplemental regulations of the Department of the Army (Army Procurement Procedure) currently in force which prescribe policy to be followed by the Department of the Army in administration of the "Buy American" Act and contract provisions with respect thereto to be included in Army contracts (APP, Section VI, Part 1, pars. 6-000 through 6-108):

"Section VI

FOREIGN PURCHASES

6-000 SCOPE OF SECTION. Supplementary to, but consistent with, ASPR, Section VI, this section sets forth policies and procedures in connection with (i) statutory prohibitions on foreign purchases, and (ii) purchases from Canadian sources.

PART 1 - BUY AMERICAN ACT AND OTHER STATUTORY PROHIBITIONS ON FOREIGN PURCHASES

6-103 APPLICABILITY OF BUY AMERICAN ACT. When in doubt as to whether a given purchase is or is not restricted by Title III, Section 2, of the Act of 3 March 1933, popularly called the Buy American Act (47 Stat. 1520; 41 U.S. Code 10a-d) or by other statutory prohibitions, Contracting Officers will forward the matter through channels to the Assistant Chief of Staff, G-4, Department of the Army (Attn: Chief, Purchases Branch), for decision. Each submission will include complete information upon which a decision may be based.

6-103.4 NONAVAILABILITY OF SUPPLIES OR MATERIALS.

a. The Secretary has delegated to the Assistant Chief of Staff, G-4, Department of the Army, authority to determine under the provisions of the Buy American Act upon a proper showing of facts, that certain articles, materials, or supplies, of the class and kind to be used by the Army Establishment, or the articles, materials, or supplies from which they are manufactured, are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality; and to authorize the purchase from foreign sources, and use by the Army Establishment, of such articles, materials, or supplies from which they are manufactured, as are determined after a proper showing of fact, to be not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality. This authority has been successively redelegated to the Chiefs and Assistant Chiefs of the Procurement Division and the Purchases Branch of that Division, respectively, in the Office of the Assistant Chief of Staff, G-4. A delegation has also been made to the heads of technical services (see subparagraph c below).

b. ASPR 6-103.4 will be applied and used only after a determination, in writing, has been made by the Chief, Purchases Branch, Office, Assistant Chief of Staff, G-4 or by the head of the technical service, his deputy, or a general officer personally selected by him, as authorized in subparagraph c below. Requests for such determinations shall be forwarded through channels and will contain the following information:

(1) Description of the item or items (include unit and quantity).
(2) Estimated cost.
(3) State whether duty is included in estimated cost (if duty is not included but normally would be included therein, give reason for exclusion).
(4) If item is to be procured f.o.b. origin, show transportation costs necessary to deliver to destination.
(5) Country of origin.
(6) Name and address of proposed contractor.

(7) Brief statement as to necessity for procurement.

(8) State what effort was made to procure a similar item of domestic origin (if there is no known domestic item which may be used as a reasonable substitute, so state).

c. The determination referred to in subparagraph a above may be made by the heads of technical services, subject to the following:

(1) This authority will not be used for exemptions under ASPR 6-104 or ASPR 6-105.1. The head of the technical service is further authorized to redelegate to the deputy of the technical service or a general officer personally selected by the head of the technical service and appropriately assigned with respect to the procurement responsibilities involved.

(2) There will be forwarded once a month to the Assistant Chief of Staff, G-4, Attn: Chief, Purchases Branch, a copy of all determinations and exemptions made by the Heads of the Technical Services. All determinations and exemptions will be collected and forwarded once a month, so as to be received in Office, Assistant Chief of Staff, G-4, by the 10th of the month following the month during which the exemption was granted.

(3) A determination is prepared in substantially the following form:

CERTIFICATE

Pursuant to the authority contained in Section 2, Title III of the act of 3 March 1933, popularly called the Buy American Act (47 Stat. 1520; 41 USC 10a-d) and authority delegated to me by the Chief of Procurement Division Office of the Assistant Chief of Staff, G-4, I hereby determine:

a. (Statement of the items to be procured and the necessity for this procurement and basis of nonavailability.)

Based upon the above showing of fact it is determined that the above described items are not mined, produced, or manufactured, or the articles, materials or supplies from which they are manufactured, are not mined, produced,

or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

Accordingly, an exception is hereby granted under the provisions of the Buy American Act to the requirement that the above described procurement be made from domestic sources and that it be of domestic origin. Authority is granted to procure the above described item(s) of foreign (Foreign Country) at an estimated total cost of $ (Total Dollar Cost including transportation and duty).

d. When a determination has been made to the effect that the provisions of the Buy American Act are not applicable to the purchase, the signed copy of such determination will be attached to the voucher upon which payment is made.

6-104 AUTHORITY TO GRANT EXCEPTIONS TO BUY AMERICAN ACT. When, in the opinion of the Contracting Officer, the conditions cited in ASPR 6-104 are present, a request will be made through channels to the Secretary (address request to the Assistant Chief of Staff, G-4, Department of the Army, Attn: Chief, Purchases Branch) for the issuance of a certificate of exemption. Such requests shall be submitted in complete quadruplicate (4 copies each of basic, indorsements, and inclosures) and will contain the following information:

a. Description of the item or items (include unit and quantity).

b. Estimated cost.

c. State whether duty is included in estimated cost (if duty is not included but normally would be included therein, give reasons for exclusion).

d. If item is to be procured f.o.b. origin, show transportation costs necessary to deliver to destination.

e. Country of origin.

f. Name and address of proposed contractor(s), if available.

g. Brief statement as to necessity for procurement.

h. Funds which are available and will be obligated for the procurement.

i. Complete justification for purchase of item of foreign source, such as excessive cost of similar items of domestic origin, loss of identification of foreign component, etc.

Accompanying request will be Certificate of Exemption prepared for the signature of the Secretary.

6-105 SUPPLIES EXCEPTED FROM BUY AMERICAN ACT.

6-105.1 Exceptions Based on Unreasonable Cost. In all cases where the differential referred to in ASPR 6-105.1 is more than $5,000 but less than 25 percent and in all cases where the Contracting Officer considers the differential to be unreasonable, the matter will be submitted in accordance with APP 6-104 for determination as to unreasonable cost.

6-105.2 Foreign Books, Newspapers, Magazines, etc. It has been administratively determined by the Assistant Secretary of the Army (Materiel) that the application of the Buy American Act to the purchase of trade, text, technical, and/or scientific books, newspapers, magazines, periodicals, and printed briefs, not published in the United States, would be inconsistent with the public interest. Therefore, such supplies and materials are exempted from the provisions of the Buy American Act and may be procured without regard to country of origin.

6-106 OTHER STATUTORY PROHIBITION ON FOREIGN PURCHASES

6-106.1 Prohibition of Annual Appropriation Acts. It has been administratively determined that all the articles of food and clothing contained in the list set forth at the end of Part 1 of Section VI, ASPR, are exempt from the general prohibition of the annual appropriation act. In the case of the procurement of other items of food and clothing which the Contracting Officer believes should be excepted, request for a certificate of exemption by the Secretary will be submitted in accordance with the procedure set forth in APP 6-104.

6-107 REFERENCES IN CONTRACTUAL DOCUMENTS.

a. General. The contract clause set forth in ASPR 7-103.14 will be inserted in all contracts for the purchase of supplies to which the Buy American Act applies.

b. Food and Clothing. In all contracts for the procurement of any article of food or clothing, not excepted from the prohibition of annual appropriation acts, the contract clause set forth in ASPR 7-104.13 will be inserted.

c. Special Clause for the Construction, Alteration, or Repair of Public Buildings and Public Works. The specifications accompanying the invitation for bids for the construction, alteration, or repair of public buildings or public works in the United States will contain the following:

Because the materials listed below, or the materials from which they are manufactured, are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, their use in the work herein specified (subject to the requirements of the specifications) is authorized, without regard to the country of origin:

[Insert here the supplies listed in paragraph 2, Armed Services List of Supplies Excepted from Buy American Act, appearing at the end of Part I, Section VI, ASPR.]

6-108 VIOLATION OF BUY AMERICAN ACT PROVISION IN CONSTRUCTION CONTRACTS. For procedure with respect to placing or removing from the list of ineligible contractors and disqualified bidders the name of any noncomplying contractor or bidder, see APP 1-303."

APPENDIX 13

AIR FORCE PROCUREMENT PROCEDURES RE "BUY AMERICAN" ACT

Subject Matter of Appendix: Supplemental regulations of the Department of the Air Force (Air Force Procurement Procedures) currently in force which prescribe policy to be followed by the Department of the Air Force in Administration of the Buy American Act (AFPR, Section VI, Part I, pars. 6-1-1 through 6-1-8):

"Part 1. BUY AMERICAN ACT AND OTHER STATUTORY PROHIBITIONS ON FOREIGN PURCHASES

	Paragraph
Applicability	6-1-1
Foreign Periodicals and Publications	6-1-2
Nonavailability of Supplies or Materials	6-1-3
Exceptions Requiring Approval of the Secretary	6-1-4
Supplies Excepted from Buy American Act	6-1-5
Reference in Contractual Documents	6-1-6
Violation of Buy American Act Provisions in Construction Contracts	6-1-7
XPolicy Regarding Military Purchases from Sources Within Soviet-Controlled Countries or Areas	6-1-8

6-1-1. APPLICABILITY (ASPR 6-103)

When in doubt as to whether a given purchase is or is not restricted by the Buy American Act or by other statutory prohibitions on foreign purchases,

contracting officers will forward the case through channels to the Deputy Chief of Staff, Materiel, Headquarters USAF, Washington 25, D.C., for decision. Each case submitted will include complete information upon which a decision may be based.

6-1-2. FOREIGN PERIODICALS AND PUBLICATIONS (ASPR 6-103.1)

(books, periodicals, magazines, and newsbooks, periodicals, magazines and newspapers) which are available through vendors located within the continental limits of the United States may be procured, unless there is a question of security involved. Care should be exercised in this respect, and where there is a question of security, requests should be forwarded to the Director of Intelligence, Headquarters USAF, for forwarding to the appropriate air attache for procurement.

b. Requests for foreign periodicals and publications which must be procured outside the United States will contain full particulars, including complete description of the item, estimated cost, name and address of vendor, citation of applicable appropriation, and shipping instructions. Such requests will be addressed to the Director of Intelligence, Headquarters, USAF, for forwarding to the appropriate air attache for procurement.

6-1-3. NONAVAILABILITY OF SUPPLIES OR MATERIALS (ASPR 6-103.4)

a. By memorandum dated 3 March 1949, the Under Secretary of the Air Force assigned to each of the officials designated below the authority and duty to make determinations under the Buy American Act where the basis for such determination is that the articles, materials, or supplies of the class or kind to be purchased or the articles, materials, or supplies from which they are manufactured, are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and in reasonably available commercial quantities and of a satisfactory quality:

(1) Deputy Chief of Staff, Materiel;
(2) Director, Procurement and Production Engineering, Office of the Deputy Chief of Staff, Materiel;

(3) Deputy Director, Procurement and Production Engineering, Office of the Deputy Chief of Staff, Materiel;
(4) Commanding General, Air Materiel Command;
(5) Director, Procurement and Production, Air Materiel Command;
(6) Chief, Procurement Division, Air Material Command;
(7) Deputy Chief, Procurement Division, Air Materiel Command.

b. The provisions of ASPR 6-103.4 shall be applied and used only after a determination, in writing, has been made by one of the above-designated officials. Requests for such determinations shall be forwarded through channels to the Commanding General, Air Materiel Command, ATTENTION: Chief, Procurement Division.

c. When a determination is made that the Buy American Act does not apply, as set forth in a above, a copy of such determination shall be attached to each contract for such articles, materials, or supplies.

6-1-4. EXCEPTIONS REQUIRING APPROVAL OF THE SECRETARY

When the conditions in ASPR 6-104 are present, a request shall be made through channels to the Deputy Chief of Staff, Materiel, Headquarters USAF, Washington 25, D. C., for the issuance of a certificate of exemption. The requests shall include: a complete description of the item, estimated cost; name and address of proposed contractor or individual; designation of agency to effect purchase; citation of applicable appropriation if purchase is to be made from a supplier or contractor located in a foreign country; and complete detailed facts to justify the purchase from a foreign source, such as excessive cost of similar domestic articles, materials, or supplies. All requests for exception to the Buy American Act will be submitted through the Commanding General, Air Material Command, ATTENTION: Chief, Procurement Division.

6-1-5. SUPPLIES EXCEPTED FROM BUY AMERICAN ACT (ASPR 6-105)

a. ARTICLES PURCHASED FOR PURPOSE OF EVALUATION AND COMPARISON:

(1) In addition to those articles, materials, and supplies which the Secretaries of the three Departments have administratively determined may be procured without regard to the country of origin, the Under Secretary of the Air Force on 3 March 1949 determined as follows:

Determination under the Buy American Act

Pursuant to the authority contained in the Buy American Act (Act of March 3, 1933, 41 U.S. Code 10a-c) and pursuant to the authority vested in me, I hereby determine that it would be inconsistent with the public interest to apply the Buy American Act to the purchase of unmanufactured articles, materials or supplies not mined or produced in the United States, and manufactured articles, materials and supplies not manufactured in the United States substantially all from articles, materials or supplies mined, produced or manufactured in the United States, where the intended use of any such articles, materials or supplies is evaluation and comparison with other similar articles, materials or supplies produced or mined in the United States, and I hereby grant an exemption from the application of said Act to all such purchases. A copy of this determination shall be attached to each such contract for supplies which is otherwise subject to the provisions of said Act.

/s/ A. S. BARROWS

A. S. BARROWS

Under Secretary of the Air Force

(2) The effect of the above-cited determination is to grant an exception from the application of said act, only to such purchases where the intended use of any such articles, materials, or supplies is evaluation and comparison with other similar articles.

Consequently, where the intended use is other than evaluation and comparison with other similar articles, the above-cited determination does not apply.

b. PURCHASES IN CANADA DURING NATIONAL EMERGENCY:

x(1) The Assistant Secretary of the Air Force, on 30 December 1950, determined as follows:

DETERMINATION UNDER BUY AMERICAN ACT

The President of the United States having, on December 16, 1950, proclaimed a National Emergency which requires that the defenses of this country be strengthened as speedily as possible, and the United States and the Dominion of Canada having entered into certain reciprocal arrangements contemplating the acquisition of defense supplies by each nation from sources in the other nation, and it being necessary that certain procurement restrictions which would otherwise impede the accomplishment of these purposes be suspended to the extent authorized by law,

I hereby determine, pursuant to the authority vested in me by the Buy American Act (41 U.S.C. 10a-d) that it is inconsistent with the public interest, during the period of said National Emergency, to apply the restrictions of said Act to the acquisition by the Department of the Air Force of manufactured and unmanufactured articles, materials and supplies in the Dominion of Canada.

Accordingly, purchases and contracts of the Department of the Air Force in the Dominion of Canada will not be subject to the provisions of the Buy American Act during the period of the National Emergency. This determination does not, however, apply to appropriation act restrictions pertaining to the purchase of food and clothing.

/s/ EUGENE M. ZUCKERT

Assistant Secretary of the Air Force

(2) While no dollar limitation was placed in the finding above, the policy of the Air Force is that the Assistant Secretary of the Air Force (Materiel) is to be consulted prior to committing the Air Force to any programs in Canada involving air-frames, or major components, such as engines, propellers, fire control, or similar items. To implement this policy, the Commanding General, Air Materiel Command will forward pertinent information to the Director of Procurement and Production Engineering, Headquarters USAF, Washington 25, D. C. so that the required consultation with the Assistant Secretary of the Air Force (Materiel) may be had prior to the placing of such contracts.

x c. EXCEPTIONS BASED ON UNREASONABLE COSTS (ASFR 6-105.1). When the contracting officer desires to submit a case involving a differential of less than 25 percent, and in those cases which must be submitted, involving a differential of less than 25 percent when the total amount of the lowest acceptable foreign bid exceeds $25,000, determination concerning unreasonable cost shall be made by the Secretary upon presentation of the facts as outlined in AFPP 6-1-4 prior to making award. Proposed awards will be reviewed at the Air Force Secretarial level and will be evaluated in a manner that will give due weight to the objectives of the Mutual Security Program. To support the Mutual Security Program and promote the mutual security of the United States and other friendly countries, competitive bids from sources in the United States and friendly foreign countries will be considered on a common basis, this having been determined by the Secretary of Defense as being consonant with the public interest. Information concerning the following factors should be submitted in order that the Secretary may consider them in determining the award:

(1) Strategic Considerations:

(a) Competing foreign sources would be unreliable because of limited capacity or location in an area where political or economic instability might hinder production or delivery.

(b) The articles, materials, or supplies or their related United States production facilities are of such strategic importance that domestic self-sufficiency must be fostered.

(c) No appreciable logistical advantage to collective security would result from maintaining or increasing production capacity in the foreign country concerned.

(2) Domestic Economic Considerations:

(a) The furnishing of scarce materials or production equipment which would be required from the United States would unduly interfere with United States military production or the development of the United States industrial mobilization base.

(b) The competing domestic source would be a facility or facilities designated 'small business' by the Small Defense Plants Administration.

(c) The competing domestic source would be located in an area which has been designated by the Department of Labor as being one of substantial labor surplus, that is, classified a 'Group IV' area by the Department of Labor.

(d) Competing domestic sources are found in an industry which is depressed or which is characterized by widespread open capacity.

6-1-6. REFERENCE IN CONTRACTUAL DOCUMENTS (ASPR 6-107)

The contract provisions with respect to the Buy American Act required by ASPR 6-107 are cited in ASPR 7-103.14.

6-1-7. VIOLATION OF BUY AMERICAN ACT PROVISIONS IN CONSTRUCTION CONTRACTS (ASPR 6-108)

See AFPP 1-3-3 for procedure concerning the placing on or removing from the List of Ineligible Contractors and Disqualified Bidders the name of any such non-complying contractor or bidder.

x6-1-8. POLICY REGARDING MILITARY PURCHASES FROM SOURCES WITHIN SOVIET-CONTROLLED COUNTRIES OR AREAS

Effective on and after 31 October 1952, the general policy of the Department of Defense is that contracts for the procurement of supplies or manufactured products originating from sources within

Soviet-controlled areas will not be awarded notwithstanding the provisions of ASPR's 6-101 through 6-105 or part 1, section VI, of AFPP. Soviet-controlled areas shall consist of those countries or areas included in Sub-group A, or Country Group R, of the Comprehensive Export Schedule issued by the Office of International Trade, Department of Commerce, listed below:

a. Albania
Bulgaria
China, including the provinces of Suiyuan, Chahar, Ningsia, and Jehol (sometimes referred to as Inner Mongolia); the provinces of Chinghai (Tsinghai) and Sikang; Sinkiang; Tibet; and Outer Mongolia; but excluding Manchuria, and excluding Taiwan (Formosa)
Czechoslovakia
Estonia
Germany (Russian-Occupied Zone only)
Hungary
Latvia
Lithuania
Manchuria, including the former Kwantung Leased Territory (the present Port Arthur Naval Base Area and the Liaoning Province)
North Korea
Poland and Danzig
Rumania
Union of Soviet Socialist Republics

b. Exceptions to this general policy will be made only in the most urgent situations, and then only after specific approval by the Secretary of the Air Force. Requests for such exceptions will be submitted to the Director of Procurement and Production Engineering, Headquarters, USAF, Washington 25, D.C." (pp. 601-4)

APPENDIX 14

DEPARTMENT OF DEFENSE DIRECTIVE NO. 4105.20, MAY 27, 1952

Subject Matter of Appendix: Department of Defense Directive No. 4105.20 dated May 27, 1952 which ordered a change in ASPR par. 6.105-1 to provide for mandatory submission of bids for the consideration of the Secretary of the Department concerned in instances where the differential is less than 25% but the lowest foreign bid exceeds $25,000:

"27 May 1952
NUMBER 4105.20

DEPARTMENT OF DEFENSE DIRECTIVE

SUBJECT 'Buy American Act' Administration

I. PURPOSE

The Munitions Board at its Meeting No. 196, held on 13 May 1952, approved a revision to the Buy American Act Administration policy by amending the last sentence of paragraph 6-105.1 of the Armed Services Procurement Regulation to read as follows:

'However, in any case involving a differential of less than 25 percent, where the Contracting Officer, because of the amount involved, considers the differential to be unreasonable, he may submit the matter for consideration to the Secretary of the Department concerned; further, in any case involving a differential of less than 25 percent, and when the total amount of the lowest acceptable

foreign proposal exceeds $25,000.000, the Contracting Officer shall submit the matter for consideration to the Secretary of the Department concerned.'

II. APPLICABILITY

This amendment shall be applicable to all procurement initiated on or after 1 June 1952.

III. IMPLEMENTATION

The ASPR Committee shall include this change in the next revision to the Armed Services Procurement Regulation.

/s/ J.D. Small

J.D. SMALL
Chairman, Munitions Board"

APPENDIX 15

DEPARTMENT OF DEFENSE DIRECTIVE
NO. 4105.22, JUNE 19, 1952

Subject Matter of Appendix 13: Department of Defense Directive No. 4105.22, dated June 19, 1952, which requires the Secretary of the Department concerned, upon submission of bids where the "Buy American" differential is less than 25%, to consider the bids on a common basis, apart certain listed strategic and domestic economic considerations:

"19 June 1952
NUMBER 4105.22

DEPARTMENT OF DEFENSE DIRECTIVE

SUBJECT Administration of the 'Buy American' Act

Reference: (a) Department of Defense Directive 4105.20, 27 May 1952 'Buy American Act' Administration

1. At the request of the Secretary of Defense, the Munitions Board recently reviewed Defense procurement policy with respect to administering the provisions of the 'Buy-American' Act, in order to determine whether or not it was consistent with the objectives of the Mutual Security Program and U. S. foreign economic policy.

2. The Munitions Board directed the Armed Services Procurement Regulations Conference to amend Paragraph 6-105.1, of the regulations, reference (a), to make it mandatory, in any case involving foreign bids of less than 25 percent differential, where the total amount of the lowest acceptable foreign proposal exceeds $25,000, for the Contracting Officer

to submit the matter for consideration of the Secretary of the military department concerned. The Board further directed that the change in the regulations was to become effective on June 1, 1952.

3. The purpose of this directive is to assure that proposed awards, which will be reviewed at the Service secretarial level, will be evaluated in such a manner as to give due weight to the objectives of the Mutual Security Program.

4. For the Department of Defense adequately to support the Mutual Security Program and promote the mutual security of the United States and other friendly countries, it is requested that competitive bids from sources in the United States and friendly foreign countries be considered on a common basis, this being consonant with the public interest. Where one or more of the following factors exist, careful discretion should be exercised in determining the award:

A. Strategic Considerations:

1. Competing foreign sources would be unreliable because of:

(a) Limited capacity or

(b) Location in an area where political or economic instability might hinder production or delivery.

2. The articles, materials, supplies or their related U. S. production facilities are of such strategic importance that domestic self-sufficiency must be fostered.

3. No appreciable logistical advantage to collective security would result from maintaining or increasing production capacity in the foreign source country concerned.

B. Domestic Economic Considerations:

1. The furnishing of scarce materials or production equipment which would be required from the United States would unduly interfere with United States military production or the development of the United States industrial mobilization base.

2. The competing domestic source would be a facility or facilities designated as 'small business' by the Small Defense Plants Administration.

3. The competing domestic source would be located in an area which has been designated by the Department of Labor as being one of substantial labor surplus, i.e., classified by the Department of Labor as a 'Group IV' area.

4. Competing domestic sources are found in an industry which is depressed or which is characterized by widespread open capacity.

/s/ WILLIAM C. FOSTER

Acting Secretary of Defense"

APPENDIX 16

UNITED STATES COAST GUARD REGULATION RE "BUY AMERICAN" ACT

Subject Matter of Appendix: Regulations promulgated by the United States Coast Guard which show policy to be followed in administration of the Buy American Act and contract clauses relative thereto (33C.F.R. 118.05-80 a through f):

"§ 118.05-80 Domestic preference. (a) The act approved March 3, 1933 (47 Stat. 1520) (41 U.S.C. 10 a-c) restricts the purchase and use of all materials not mined, produced or manufactured in the United States. The Director of Procurement has ordered that, in deciding the reasonableness of the cost of domestic products, the following differential scales shall be applied in favor of the domestic articles, materials or supplies.

(1) On purchases where the foreign bid is $100 or less, a differential of 100 percent shall apply.

(2) On purchases where the foreign bid exceeds $100, a differential of 25 percent shall apply.

(3) The differentials in subparagraphs (1) and (2) of this paragraph are to be applied to purchases within the continental limits of the United States, exclusive of Alaska.

(b) If, after applying the differential, the low bid is for materials not mined, produced in the United States or manufactured in the United States substantially all from articles, materials or supplies mined, produced, or manufactured, as the case may be, in the United States, the bids will be forwarded to Headquarters for instructions or a certificate from the head of the department as the case may require prior to award.

(c) Where all bidders offer material of foreign growth, production or manufacture, the bids likewise shall be submitted to Headquarters. In cases of urgency the facts may be reported by dispatch.

(d) The following listed materials and supplies, and any articles, materials or supplies which are manufactured principally from any of the items listed may be purchased without regard to the country of origin. The contract provisions prescribed in paragraphs (e) and (f) of this section need not be included in any contract for the purchase of articles, materials or supplies exempted by this section:"
(33 C.F.R. Supp. at pp. 86-87)

NOTE: Supplies to be procured for public use and supplies to be used in the construction, alteration or repair of any public building or public work are listed in the regulations at this point. The list is not reproduced herein. It includes no electrical products as such although it does include certain new materials such as copper, lead, zinc, etc. which may be used in their production.

"(e) Every construction contract shall contain the following clause:

Article . Domestic preference. In the performance of the work covered by this contract, the contractor, subcontractors, material men or suppliers shall use only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States. The foregoing provisions shall not apply to such articles, materials, or supplies of the class or kind to be used or such articles, materials, or supplies from which they are manufactured, as are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or to such articles, materials, or supplies as may be excepted by the head of the department under the proviso of title III, section 3, of the act of March 3, 1933, 47 Stat. 1520 (U.S. Code, title 41, sec. 10b).

(f) Every supply contract shall contain the following clause:

Article . Domestic preference. Unless the head of the department or independent establishment concerned shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States shall be delivered pursuant to this contract, except as noted in the specifications and/or other papers hereto attached. The provisions of this article shall not apply with respect to articles, materials, or supplies for use outside the United States, or if articles, materials, or supplies of the class or kind to be used, or the articles, materials, supplies from which they are manufactured are not mined, produced or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality." (33 C.F.R. Supp. pp. 87-88)

APPENDIX 17

DEPARTMENT OF INTERIOR ORDER NO. 2889 AND AMENDMENT NO. 1 THERETO RE "BUY AMERICAN ACT"

Subject Matter of Appendix: Department of Interior Order No. 2289 of January 21, 1947 and Amendment No. 1 thereto which prescribe policy to be followed by Department of Interior agencies in administration of the Buy American Act.

(a) Order No. 2289:

"SUBJECT: Purchase of supplies of foreign growth, production, or manufacture.

1. Section 2, Title III, of the act of March 3, 1933 (47 Stat. 1520; 41 U.S.C. 10a), reads as follows:

> 'Notwithstanding any other provision of law, and unless the head of the department or independent establishment concerned shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, shall be acquired for public use. This section shall not apply with respect to articles, materials, or supplies for use outside the United States, or if articles, materials, or supplies or the class or kind to be used or the articles, materials, or supplies from which they are manufactured are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.'

2. A field purchasing officer or contracting officer may purchase products which have not been mined, produced, or manufactured in the United States or which have not been manufactured in the United States substantially from articles, materials, or supplies mined, produced, or manufactured in the United States,

(a) if he determines that the products or the articles, materials, or supplies used in their manufacture, are not mined, produced, or manufactured in the United States in sufficient and available commercial quantities or are not of a quality which will satisfy the Government's purpose; or

(b) if he determines that the price of domestic products exceeds the price of foreign products, including products which have not been manufactured substantially from domestic articles, materials, or supplies, after application of the following differential sale formula for the determination of the reasonableness of cost of domestic products:

(1) if the amount of the purchase is $100 or less, a differential of 100% shall be added to the price at which the foreign product is offered;

(2) if the amount of the purchase is $100 or more, a differential of 25% shall be added to the price at which the foreign product is offered.

3. A purchasing officer or contracting officer shall certify in the contract or on the purchase voucher any determinations made in accordance with section 2 of this order.

4. This order shall supersede all other instructions outstanding."

(b) Order No. 2289, Amendment No. 1:

"Subject: Purchase of supplies of foreign growth, production, or manufacture

Subsections 2(b) (1) and 2(b) (2) of Order No. 2289 are superseded and the following substituted in lieu thereof:

(1) If the amount of the purchase is $100 or less, a differential of 100% shall be added to the price at which the foreign product is offered, exclusive of tariff or duty, and any tariff or duty exigible shall then be added thereto and considered in evaluating bids.

(2) If the amount of the purchase is $100 or more, a differential of 25% shall be added to the price at which the foreign product is offered, exclusive of tariff or duty, and any tariff or duty exigible shall then be added thereto and considered in evaluating bids; provided, however, that the head of the Bureau or Office concerned may at any time submit a particular case for consideration of the Secretary as to reasonableness of cost of domestic products if the lowest domestic bid exceeds the lowest foreign bid (including duty) by an amount greater than $50,000, although the differential may be less than 25%."

APPENDIX 18

ATOMIC ENERGY COMMISSION G.M. BULLETIN
S&S-41 RE "BUY AMERICAN" ACT

Subject matter of Appendix: Atomic Energy Commission GM Bulletin S&S-41 dated September 3, 1952 which sets forth current policy followed by the Atomic Energy Commission in administration of the Buy American Act:

"GM-S&S-41

U.S. ATOMIC ENERGY COMMISSION

Serial No. 241 Procurement and Contracts

BUY AMERICAN ACT

FOR: Principal Staff, Washington
Managers of Operations
Manager, San Francisco Area

REF: Act of March 3, 1933, 47 Stat. 1520, as amended, 49 U.S.C. 10a, 10b, 10c and 10d.

1. Applicability

a. Kinds of Supplies. The Buy American Act applies to raw materials and manufactured products. However, in the case of manufactured products, the Buy American Act applies to the end product itself and to the components directly furnished for that end product, but does not apply to supplies that are used in the manufacture of any such component.

b. Origin of Supplies Used in Manufactured Supplies. The prohibitions of the Buy American Act do not apply to supplies manufactured in the United States when such supplies are manufactured 'substantially all' from supplies mined, produced, or manufactured in the United States. Supplies may be considered to be manufactured 'substantially all' from United States supplies whenever the cost of foreign supplies used in such manufacture constitutes 25 percent or less of the cost of all supplies used in such manufacture.

In this connection, suppliers should accompany their bids or quotations contemplating the furnishing or use of foreign supplies with a certificate substantially as follows:

'Not to exceed_____percent in cost of the materials, used directly in the manufacture of the supplies offered, is of foreign origin.'

Any supplies of an unknown origin used in such manufacture shall be considered to be foreign supplies.

2. Exceptions

a. The Buy American Act is not applicable by its terms to:

(1) materials and supplies acquired for use outside the United States;

(2) materials and supplies not produced or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

b. In addition, exceptions may be made under the Act pursuant to administrative determinations by the 'head of the department or independent establishment concerned' that restriction to domestic sources is inconsistent with the public interest or that the cost of the domestic product is unreasonable. The General Manager has determined that the particular articles, materials, and supplies listed in Appendix 'A' should be excepted. The General Manager has also determined that the cost would be unreasonable, and that therefore the prohibitions of the Buy American Act shall not apply, when the lowest net cost of the United States product exceeds the lowest net cost of the foreign product, including duty, by 25 percent or more (or by 100 percent or more in the case of a foreign product costing $100 or less). However, in any case involving a differential of less than 25 percent, where the contracting officer, because of the amount involved, considers the differential to be unreasonable, he may submit the matter for consideration to the General Manager; and shall in any case submit the matter for such consideration when the differential is more than $5,000 but less than 25 percent.

M. W. Boyer
General Manager

Attachment:
Appendix A -- List of Excepted Supplies"

Note: The list of excepted supplies attached to this bulletin is not here reproduced. It includes no electrical products as such although it does include certain raw materials, such as copper, lead and zinc, used in their manufacture.

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APPENDIX 19

EXECUTIVE ORDER NO. 10210 UNDER FIRST WAR POWERS ACT

Subject Matter of Appendix: Excerpts from Executive Order 10210 (Feb. 2, 1951, 16 FR 1049) which show delegation by the President of his powers under the First War Powers Act of 1941 as amended and extended to the Department of Defense (through the Secretaries of the Army, Navy and Air Force) and the Department of Commerce and the limitations upon the authority so delegated:

"EXECUTIVE ORDER 10210

AUTHORIZING THE DEPARTMENT OF DEFENSE AND THE DEPARTMENT OF COMMERCE TO EXERCISE THE FUNCTIONS AND POWERS SET FORTH IN TITLE II OF THE FIRST WAR POWERS ACT, 1941, AS AMENDED BY THE ACT OF JANUARY 12, 1951, AND PRESCRIBING REGULATIONS FOR THE EXERCISE OF SUCH FUNCTIONS AND POWERS

By virtue of the authority vested in me by the First War Powers Act, 1941, as amended by the act of January 12, 1951, entitled 'An Act to amend and extend title II of the First War Powers Act, 1941' (Public Law 921, 81st Congress), hereinafter called the Act, and as President of the United States and Commander in Chief of the armed forces of the United States, and deeming that such action will facilitate the national defense, it is hereby ordered as follows:

PART 1

Under such regulations, which shall be uniform to the extent practicable, as may be prescribed or approved by the Secretary of Defense:

1. The Department of Defense is authorized, within the limits of the amounts appropriated and the contract authorization provided therefor, to enter into contracts and into amendments or modifications of contracts heretofore or hereafter made, and to make advance progress, and other payments thereon, without regard to the provisions of law relating to the making, performance, amendment, or modification of contracts.

. . . . . .

3. The contracts hereby authorized to be made include agreements of all kinds (whether in the form of letters of intent, purchase orders, or otherwise) for all types and kinds of things and services necessary, appropriate or convenient for the national defense, or for the invention, development, or production of, or research concerning any such things, including, but not limited to aircraft, buildings, vessels, arms, armament, equipment, or supplies of any kind, or any portion thereof, including planes, spare parts and equipment therefor, materials, supplies, facilities, utilities, machinery, machine tools, and any other equipment without any restriction of any kind, either as to type, character, location, or form.

. . . . . .

5. Advertising, competitive bidding, and bid, payment, performance or other bonds or other forms of security need not be required.

6. Complete data shall be maintained by the Department of Defense as to all contracts and purchases made pursuant to the Act and this order. The Secretaries of Defense, the Army, the Navy, and the Air Force shall make available for public inspection so much of such data as they may respectively deem compatible with the public interest and as does not cover classified contracts or purchases.

. . . . . .

11. All contracts entered into, amended, or modified pursuant to authority of this order shall include a clause to the effect that the Comptroller General of the United States or any of his duly authorized representatives shall have access to and the right to examine any pertinent books, documents, papers, and records of the contractor or any of his subcontractors engaged in the performance of and involving transactions related to such contracts or subcontracts.

. . . . . .

14. No contract or modification or amendment thereof shall be exempt from the provisions of the Walsh-Healy Act (49 Stat. 2036), as amended, because of being entered into without advertising or competitive bidding, and the provisions of such act, the Davis-Bacon Act (49 Stat. 1011), as amended, the Copeland Act (48 Stat. 948), as amended, and the Eight Hour Law (37 Stat. 137), as amended, if otherwise applicable shall apply to contracts made and performed under the authority of this order.

. . . . . .

16. Nothing herein contained shall prejudice any authority to utilize the provisions of the Armed Services Procurement Act of 1947 (62 Stat. 26) and regulations thereunder.

PART II

The provisions of Part 1 of this order are hereby extended to the Department of Commerce; and, subject to the limitations and regulations contained in such part, and under such regulations as he may prescribe, the Secretary of Commerce is authorized to perform and exercise, as to the Department of Commerce, all the functions and authority vested in and granted by Part 1 of this order to the Secretaries named therein: Provided, That the regulations of the Secretary of Commerce need not be approved by the Secretary of Defense but shall, to the extent practicable, be uniform with the regulations, prescribed or approved by the Secretary of

Defense pursuant to Part 1 hereof: And provided further, That nothing contained herein shall prejudice any other authority which the Department of Commerce or the Secretary of Commerce may have with respect to procurement.

HARRY S. TRUMAN

THE WHITE HOUSE,
February 2, 1951."

Note: Application of the above order was, by subsequent orders, extended to the Atomic Energy Commission, the General Services Administration and the Department of Interior. (Exec. Ord. No. 10216, Feb. 26, 1951, 16 F.R. 1815; Exec. Ord. No. 10227, March 26, 1951, 16 F.R. 2675; Exec. Ord. No. 10298, Nov. 1, 1951, 16 F.R. 11135)

APPENDIX 20

TARIFF ACT OF 1930, SECTION 1, SCHEDULE 3, PARAGRAPH 353

Subject Matter of Appendix: Section 1, Schedule 3, Paragraph 353 of the Tariff Act of 1930 (June 17, 1930, c. 497, Title I, 46 Stat. 590, 609, 618; 19 U.S.C. 1001) which prescribes an ad valorem rate of duty of 35% on most electrical products, including generators and transformers:

"DUTIABLE LIST

Section 1. That on and after the day following the passage of this Act, except as otherwise specially provided for in this Act, there shall be levied, collected, and paid upon all articles when imported from any foreign country into the United States or into any of its possessions (except the Philippine Islands, the Virgin Islands, American Samoa, and the Island of Guam) the rates of duty which are prescribed by the schedules and paragraphs of the dutiable list of this title, namely:

. . . . . .

"SCHEDULE 3.--METALS AND MANUFACTURERS OF

. . . . . .

"PAR. 353. All articles suitable for producing, rectifying, modifying, controlling, or distributing electrical energy;

electrical telegraph (including printing and typewriting), telephone, signaling, radio, welding, ignition, wiring, therapeutic, and X-ray apparatus, instruments (other than laboratory), and devices; and

articles having as an essential feature an electrical element or device, such as electric motors, fans, locomotives, portable tools, furnaces, heaters, ovens, ranges, washing machines, refrigerators, and signs;

all the foregoing, and parts thereof, finished or unfinished, wholly or in chief value of metal, and not specially provided for, 35 per centum ad valorem."

APPENDIX 21

CURRENT TARIFF RATES ON TARIFF ACT PARAGRAPH 353 ITEMS

Subject Matter of Appendix: United States Tariff Commission publication "United States Import Duties, 1952" (TC 1.10:Im 7/4/1952) which shows the reduced tariff rates currently in effect on Tariff Act paragraph 353 electrical items as the result of United States trade agreement concessions since World War II:

Par. No.	Description	Full Rate	Reduced Rate
353	Articles having as an essential feature an electrical device or element, such as electric fans, furnaces, heaters, locomotives, motors, ovens, portable tools, ranges, refrigerators, signs, and washing machines, finished or unfinished, wholly or in chief value of metal, and nspf:		
	Batteries	35% ad val.	17 1/2% ad val.
	Blowers and fans.	35% ad val.	17 1/2% ad val.
	Calculating machines specially constructed for multiplying and dividing, and having an electric motor as an essential feature. . . .	35% ad val.	12 1/2% ad val.
	Cooking stoves and ranges . .	35% ad val.	10% ad val.
	Cordage machines.	35% ad val.	15% ad val.
	Flashlights	35% ad val.	
	Furnaces, heaters, and ovens.	35% ad val.	12 1/2% ad val.
	Industrial cigarette-making machines.	35% ad val.	15% ad val.
	Internal-combustion engines:		
	Carburetor type	35% ad val.	8-3/4% ad val.

Par. No.	Description	Full Rate	Reduced Rate
353 (con.)	Non-carburetor types:		
	Horizontal type, weighing each --		
	Not over 5,000 pounds	35% ad val.	10% ad val.
	Over 5,000 pounds	35% ad val.	17 1/2% ad val.
	Not of the horizontal type, weighing each --		
	Not over 2,500 pounds	35% ad val.	10% ad val.
	Over 2,500 pounds	35% ad val.	17 1/2% ad val.
	Articles having an electrical element etc. (con.):		
	Machines for determining the strength of articles or materials in compression, shear, tension, or torsion	35% ad val.	20% ad val.
	Machines for packaging pipe tobacco; machines for wrapping candy; machines for wrapping cigarette packages; and combination candy cutting and wrapping machines	35% ad val.	10% ad val.
	Motors	35% ad val.	12 1/2% ad val.
	Television apparatus	35% ad val.	12 1/2% ad val.
	Tobacco cutting machines	35% ad val.	15% ad val.
	Washing machines	35% ad val.	17 1/2% ad val.
	Other	35% ad val.	13-3/4% ad val.
	Articles suitable for controlling, distributing, modifying, producing, or rectifying electrical energy, finished or unfinished, wholly or in chief value of metal, and nspf (not including batteries or flashlights, but including photocells and all electronic tubes other than radio, television, and X-ray tubes):		
	Switches and switch gear which are not wiring apparatus, instruments, or devices	35% ad val.	17 1/2% ad val.
	Transformers	35% ad val.	12 1/2% ad val.
	Other	35% ad val.	15% ad val.

Par. No.	Description	Full Rate	Reduced Rate
353 (con.)	Electrical apparatus, instruments (other than laboratory) and devices, finished or unfinished, wholly or in chief value of metal, and nspf:		
	Ignition, radio, signalling, and welding	35% ad val.	12 1/2% ad val.
	Telegraph (including printing and typewriting), telephone, and therapeutic (including diagnostic)	35% ad val.	17 1/2% ad val.
	Wiring	35% ad val.	17 1/2% ad val.
	X-ray:		
	Tubes	35% ad val.	10% ad val.
	Other	35% ad val.	8-3/4% ad val.
	Parts, finished or unfinished wholly or in chief value of metal, nspf, of articles provided for in this paragraph:		
	X-ray tubes and parts thereof	35% ad val.	10% ad val.
	Other	35% ad val.	The rate for the article of which they are parts

APPENDIX 22

RECIPROCAL TRADE AGREEMENTS ACT OF 1934, SECTION 1

Subject Matter of Appendix: Section 1* of the Reciprocal Trade Agreements Act of 1934 as amended and extended and currently in force which sets forth the purposes of the Act and the authority of the President to enter into trade agreements and proclaim modifications in rates of duty. The following quotation is from 19USC 1351:

> "(a) For the purpose of expanding foreign markets for the products of the United States (as a means of assisting in establishing and maintaining a better relationship among various branches of American agriculture, industry, mining, and commerce) by regulating the admission of foreign goods into the United States in accordance with the characteristics and needs of various branches of American production so that foreign markets will be made available to those branches of American production which require and are capable of developing such outlets by affording corresponding market opportunities for foreign products in the United States, the President, whenever he finds as a fact that any existing duties or other import restrictions of the United States or any foreign country are unduly burdening and restricting the foreign trade of the United States and that the purpose above declared will be promoted by the means hereinafter specified, is authorized from time to time -

---

*Added to the Tariff Act of 1930 as Section 350 (a) by June 12, 1934, c.474, Sec. 1,48 Stat.943; amended by the following: June 7, 1943, c.118, Sec. 2,57 Stat.125; July 5, 1945, c.269, Secs. 2,3,59 Stat. 410; Sept. 26, 1949, c.585, Secs. 4,6, 63 Stat. 698

"(1) To enter into foreign trade agreements with foreign governments or instrumentalities thereof: and

"(2) To proclaim such modifications of existing duties and other import restrictions, or such additional import restrictions, or such continuance, and for such minimum periods, of existing customs or excise treatment of any article covered by foreign-trade agreements, as are required or appropriate to carry out any foreign-trade agreement that the President has entered into hereunder. No proclamation shall be made increasing or decreasing by more than 50 per centum any rate of duty, however established, existing on January 1, 1945 (even though temporarily suspended by Act of Congress), or transferring any article between the dutiable and free lists. The proclaimed duties and other import restrictions shall apply to articles the growth, produce, or manufacture of all foreign countries, whether imported directly, or indirectly: Provided, That the President may suspend the application to articles the growth, produce, or manufacture of any country because of its discriminatory treatment of American commerce or because of other acts (including the operations of international cartels) or policies which in his opinion tend to defeat the purposes set forth in this section; and the proclaimed duties and other import restrictions shall be in effect from and after such time as is specified in the proclamation. The President may at any time terminate any such proclamation in whole or in part.

"(c) As used in this section, the term "duties and other import restrictions" includes (1) rate and form of import duties and classification of articles, and (2) limitations, prohibitions, charges, and exactions other than duties, imposed on importation or imposed for the regulation of imports. . ."

"(d) (1) When any rate of duty has been increased or decreased for the duration of war or any emergency, by agreement or otherwise, any further increase or decrease shall be computed upon the basis of the post-war or post-emergency rate carried in such agreement or otherwise.

"(2) Where under a foreign trade agreement the United States has reserved the unqualified right to withdraw or modify, after the termination of war or

an emergency, a rate on a specific commodity, the rate on such commodity to be considered as "existing on January 1, 1945" for the purpose of this section shall be the rate which would have existed if the agreement had not been entered into.

"(3) No proclamation shall be made pursuant to this section for the purpose of carrying out any foreign trade agreement the proclamation with respect to which has been terminated in whole by the President prior to July 5, 1945."

APPENDIX 23

REDUCED TARIFF RATES IN EFFECT ON JANUARY 1, 1945

Subject Matter of Appendix: Excerpts from schedules of United States tariff concessions annexed to reciprocal trade agreements with the United Kingdom (Nov. 17, 1938, 54 Stat. 1897), Canada (Nov. 17, 1938, 53 Stat. 2348), Switzerland (Jan. 9, 1936, 49 Stat. 3917), Sweden (May 25, 1935, 49 Stat. 3755) and the Netherlands (Dec. 20, 1935, 50 Stat. 1504) which established reduced tariff rates, in effect on January 1, 1945, on certain paragraph 353 electrical items. The Reciprocal Trade Agreements Act as amended authorizes reduction of the rates so in effect by 50%.

a) Schedule annexed to United Kingdom agreement.

"United States Tariff Act of 1930 Paragraph	Description of Article	Rate of Duty
353	Electrical telegraph (including printing and typewriting) apparatus, instruments (other than laboratory), and devices, finished or unfinished, wholly or in chief value of metal	17-1/2% ad val.
353	Cordage machines having as an essential feature an electrical element or device, finished or unfinished, wholly or in chief value of metal, and not specially provided for	20% ad val.

353	Tobacco cutting machines and industrial cigarette making machines, having as an essential feature an electrical element or device, finished or unfinished, wholly or in chief value of metal, and not specially provided for	22-1/2% ad val.
353	Machines for packaging pipe tobacco, machines for wrapping cigarette packages, and machines for wrapping candy; combination candy cutting and wrapping machines; all the foregoing having as an essential feature an electrical element or device, finished or unfinished, wholly or in chief value of metal, and not specially provided for	17-1/2% ad val.
353	Internal-combustion engines having as an essential feature an electrical element or device, finished or unfinished, wholly or in chief value of metal, and not specially provided for:	
	Carburetor type	17-1/2% ad val.
	Other than carburetor type:	
	Horizontal type, weighing not over five thousand pounds each	17-1/2% ad val.
	Other than horizontal type, weighing not over two thousand five hundred pounds each	17-1/2% ad val.
353	Electrical signaling, radio, welding, and ignition apparatus, instruments (other than laboratory), and devices; electrical generators, transformers, converters, double current and motor generators, dynamotors, and all other articles suitable for producing, rectifying, modifying, controlling, or distributing electrical energy, and articles having as an essential feature an electrical element or device, such as electric motors, locomotives, portable tools, furnaces, heaters, ovens, refrigerators, and signs (except telephone, wiring, diagnostic, and therapeutic apparatus, instruments, and devices, primary cells, flashlights, switches, switch gear, fans, blowers, washing machines, and machines not herein provided for	

	by name which would be dutiable under paragraph 372 of the Tariff Act of 1930 if of a kind which could be designed to operate without such electrical element or device, and except articles of a class or kind with respect to which United States import duties have been reduced or bound against increase pursuant to any Agreement heretofore concluded under section 350 of such Act, as amended); all the foregoing, not specially provided for, finished or unfinished, wholly or in chief value of metal, and not provided for heretofore in any item numbered 353 in this Schedule	25% ad val.
353	Machines having as an essential feature an electrical element or device and which would be dutiable under paragraph 372 of the Tariff Act of 1930 if of a kind which could be designed to operate without such electrical element or device (except articles of a class or kind with respect to which United States import duties have been reduced or bound against increase pursuant to any Agreement heretofore concluded under section 350 of such Act, as amended); all the foregoing, not specially provided for, finished or unfinished, wholly or in chief value of metal, and not provided for heretofore in any item numbered 353 in this Schedule	27-1/2% ad val.
353	Parts, not specially provided for, finished or unfinished, wholly or in chief value of metal, of any articles provided for in any numbered 353 in this Schedule, shall be dutiable at the same rate of duty as the articles of which they are parts."	

b) Schedule annexed to Canadian agreement.

"United States Tariff Act of 1930 Paragraph	Description of Article	Rate of Duty
353	Washing machines, having as an essential feature an electrical element or device, and parts thereof; any of the foregoing, finished or unfinished, wholly or in chief value of metal, and not specially provided for	17-1/2% ad val.
353	Cooking stoves and ranges, having as an essential feature an electrical heating element, and parts thereof; any of the foregoing, finished or unfinished, wholly or in chief value of metal, and not specially provided for	17-1/2% ad val.

c) Schedule annexed to Swiss agreement.

"United States Tariff Act of 1930 Paragraph	Description of Article	Rate of Duty
353	Testing machines for determining the strength of materials or articles in tension, compression, torsion, or shear, having as an essential feature an electrical element or device, and parts thereof; any of the foregoing, finished or unfinished, wholly or in chief value of metal, and not specially provided for	20% ad val.
353	Steam boilers operating with water under forced circulation at a rate of circulation at least 8 times the rate of evaporation, and having combustion chambers designed for a working pressure exceeding 30 pounds absolute to the square inch, having as an essential feature an electrical element or device, and parts thereof; any of the foregoing, finished or unfinished, wholly or in chief value of metal, and not specially provided for	20% ad val.

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d) Schedule annexed to Swedish agreement.

"United States Tariff Act of 1930 Paragraph	Description of Article	Rate of Duty
353	Calculating machines specially constructed for multiplying and dividing, having an electric motor as an essential feature, and parts thereof; any of the foregoing, finished or unfinished, wholly or in chief value of metal, and not specially provided for	25% ad val.

e) Schedule annexed to Netherlands agreement.

"United States Tariff Act of 1930 Paragraph	Description of Article	Rate of Duty
353	Electrical x-ray apparatus, instruments (other than laboratory), and devices, and parts thereof; any of the foregoing, finished or unfinished, wholly or in chief value of metal, and not specially provided for	17-1/2% ad val.

APPENDIX 24

GENERAL AGREEMENT ON TARIFF AND TRADE - TARIFF RATE REDUCTIONS

Subject Matter of Appendix: The United States schedule of tariff concessions annexed to the General Agreement on Tariff and Trade negotiated and signed at Geneva on October 30, 1947, which shows Tariff Act paragraph 353 electrical items with respect to which reductions were negotiated and the new rates which became effective on January 1, 1948 (61(5) Stat. A1205-06):

"Tariff Act of 1930, Paragraph	Description of Products	Rate of Duty
353	Electrical apparatus, instruments (other than laboratory), and devices, finished or unfinished, wholly or in chief value of metal and not specially provided for:	
	Telegraph (including printing and typewriting), telephone, and therapeutic (including diagnostic)	17-1/2 ad val.
	Signaling, radio, welding, and ignition	15% ad val.
	X-ray	10% ad val.
353	Articles suitable for producing, rectifying, modifying, controlling, or distributing electrical energy, and articles having as an essential feature an electrical element or device, such as electric motors, fans, locomotives, portable tools, furnaces, heaters, ovens, ranges, washing machines, refrigerators,	

Tariff Act of 1930, Paragraph	Description of Products	Rate of Duty
353	and signs; all the foregoing (not including electrical wiring apparatus, instruments, and devices), finished or unfinished, wholly or in chief value of metal, and not specially provided for:	
	Switches and switchgear which are not wiring apparatus, instruments, or devices; fans; blowers; and washing machines	17-1/2% ad val.
	Machines for packaging pipe tobacco; machines for wrapping cigarette packages; machines for wrapping candy; combination candy cutting and wrapping machines; and cooking stoves and ranges	10% ad val.
	Internal-combustion engines:	
	Carburetor type	10% ad val.
	Other, of the horizontal type and weighing not over 5,000 pounds each, or not of the horizontal type and weighing not over 2,500 pounds each	10% ad val.
	Other articles (except machines for determining the strength of materials or articles in tension, compression, torsion, or shear; flashlights; batteries; vacuum cleaners; and internal-combustion engines)	15% ad val.
353	Parts, finished or unfinished, wholly or in chief value of metal, not specially provided for, of articles provided for in any item 353 of this Part	The same rate of duty as the articles of which they are parts."

APPENDIX 25

ANNECY SCHEDULES, GENERAL AGREEMENT ON TARIFF AND TRADE-TARIFF REDUCTIONS

Subject Matter of Appendix: That portion of United States Schedule XX, Part I, included in the Annecy Schedules of Tariff Concessions, which shows the addition of one Tariff Act paragraph 353 electrical item to other items already covered by the General Agreement concessions, and the new rate of duty applicable thereto. (64 Stat., Part 3 at p. B 353):

"Tariff Act of 1930, paragraph	Description of Products	Rate of Duty
353	articles having as an essential feature an electrical element or device, and parts thereof, all the foregoing, finished or unfinished, wholly or in chief value of metal, and not specially provided for:	
	Internal-combustion engines (except carburetor type), of the horizontal type and weighing over 5,000 pounds each, or not of the horizontal type and weighing over 2,500 pounds each, and parts of the foregoing	17-1/2% ad val."

APPENDIX 26

TORQUAY SCHEDULES, GENERAL AGREEMENT ON TARIFF AND TRADE - RATE REDUCTIONS

Subject Matter of Appendix: Excerpts from a table appearing in Department of State Publication 4209, Commercial Policy Series 135, released May 1951 (Analysis of Torquay Protocol of Accession, Schedules and Related Documents) which shows the Tariff Act paragraph 353 electrical items upon which the United States made concessions at Torquay and the new rates thereon (pp. 399-400):

"Tariff paragraph	Commodity Description	Rate of Duty Jan. 1, 1951	Under Torquay Agreement
353	Transformers and Parts	15%	12-1/2%
	Radio apparatus and parts	15%	12-1/2%
	Sockets, attachment plugs, and switches not over 10 amperes, cutouts, and fuses not over 30 amperes, and other wiring devices such as are used in house wiring	35%	17-1/2%
	Electrical goods and parts, nes, including signaling, welding, ignition apparatus, instruments (other than laboratory), and devices	15%	12-1/2%
	X-ray apparatus and parts (except X-ray tubes)	10%	8-3/4%
	Articles having as an essential feature an electrical element or device, nspf:		
	Motors:		
	Stationary, railway, vehicle, and other, nes	15%	12-1/2%
	Parts of	15%	12-1/2%
	Internal combustion engines, carburetor type, and parts	10%	8-3/4%

Tariff Paragraph	Commodity Description	Rate of Duty Jan. 1, 1951	Rate of Duty Under Torquay Agreement
353	Electric furnaces, heaters and ovens, and parts	15%	12-1/2%
	Batteries, other than storage	35%	17-1/2%
	Steam boilers operating with water under forced circulation at least 8 times the rate of evaporation, etc., and parts	15%	13-3/4%
	Television apparatus and parts (except cameras)	15%	12-1/2%
	Calculating machines and parts specially constructed for multiplying and dividing, nspf	15%	12-1/2%
	'Other' machines and parts which would be dutiable under par. 372 if of a kind which could be designed to operate without such electrical element or feature	15%	13-3/4%
	'Other' and parts, such as locomotives, portable tools, refrigerators and signs	15%	13-3/4%"

APPENDIX 27

UNITED STATES - SWITZERLAND TRADE AGREEMENT - MOST FAVORED NATION CLAUSE

Subject Matter of Appendix: The "most favored nation" clause in the United States - Switzerland bi-lateral trade agreement effective June 6, 1936 (Agreement Article X, 49 Stat. at pp. 3923-24):

"ARTICLE X

The United States of America and Switzerland agree to grant each other unconditional and unrestricted most-favored-nation treatment in all matters concerning customs duties and charges of every kind and in the method of levying duties and, further, in all matters concerning the rules, formalities and charges imposed in connection with the clearing of goods through the customs, and with respect to all laws or regulations affecting the sale or use of imported goods within the country.

Accordingly, natural or manufactured products having their origin in the United States of America or Switzerland shall in no case be subject in the other country, in regard to the matters referred to above, to any duties, taxes or charges other or higher, or to any rules or formalities other or more burdensome, than those to which the like products having their origin in any third country are or may hereafter be subject.

Similarly, natural or manufactured products exported from the territory of the United States of America or Switzerland and consigned to the territory of the other country shall in no case be subject, with respect to exportation and in regard to the above-mentioned matters, to any duties, taxes or charges other or higher, or to any rules or formalities other or more burdensome, than those to which the like products when consigned to any third country are or may hereafter be subject.

Any advantage, favor, privilege or immunity which has been or may hereafter be granted by the United States of America or Switzerland, in regard to the above-mentioned matters, to a natural or manufactured product originating in any third country or consigned to the territory of any third country, shall be accorded immediately and without compensation to the like product originating in or consigned to the territory of Switzerland or the United States of America, respectively."

APPENDIX 28

GENERAL AGREEMENT ON TARIFF AND TRADE - MOST FAVORED NATION CLAUSE

Subject Matter of Appendix 28: Article I(1) of the General Agreement on Tariff and Trade signed at Geneva on October 10, 1947. This is the basic "most favored nation" clause in the Agreement (61 Stat., Part 5 at p. A12):

"PART I

Article I

General Most-Favoured-Nation Treatment

1. With respect to customs duties and charges of any kind imposed on or in connection with importation or exportation or imposed on the international transfer of payments for imports or exports, and with respect to the method of levying such duties and charges, and with respect to all rules and formalities in connection with importation and exportation, and with respect to all matters referred to in paragraphs 1 and 2 of Article III any advantage, favour, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties."

Note 1. Excluded from most favored nation treatment by Article I (2 and 3) are certain preferential duties then in effect between, for example, parts of the British Empire, the United States and the Philippines, members of customs unions, etc.

Note 2. Paragraphs 1 and 2 of Article III, referred to in the text relate to treatment on internal taxation and require that no preferential internal taxes be set up and that imported products be treated no less favorably than domestic products with respect to such taxes.

APPENDIX 29

TARIFF ACT OF 1930, SECTION 303

Subject Matter of Appendix: Section 303 of the Tariff Act of 1930 (June 17, 1930, C. 497, Title III, Sec. 303, 46 Stat. 687; 19 U.S.C. 1303) which authorizes the Secretary of the Treasury to impose "countervailing duties" of where the country of origin or export of the products involved pays or bestows bounties or grants on their manufacture, production or export (46 Stat. 687, Sec. 303):

> "Whenever any country, dependency, colony, province, or other political subdivision of government, person, partnership, association, cartel, or corporation shall pay or bestow, directly or indirectly, any bounty or grant upon the manufacture or production or export of any article or merchandise manufactured or produced in such country, dependency, colony, province, or other political subdivision of government, and such article or merchandise is dutiable under the provisions of this Act, then upon the importation of any such article or merchandise into the United States, whether the same shall be imported directly from the country of production or otherwise, and whether such article or merchandise is imported in the same condition as when exported from the country of production or has been changed in condition by remanufacture or otherwise, there shall be levied and paid, in all such cases, in addition to the duties otherwise imposed by this Act, an additional duty equal to the net amount of such bounty or grant, however the same be paid or bestowed. The Secretary of the Treasury shall from time to time ascertain and determine, or estimate, the net amount of each such bounty or grant, and shall declare the net amount so determined or estimated. The Secretary of the Treasury shall make all regulations he may deem necessary for the identification of such articles and merchandise and for the assessment and collection of such additional duties."

APPENDIX 30

TARIFF ACT OF 1930, SECTION 336

Subject Matter of Appendix: Section 336 of the Tariff Act of 1930 (June 17, 1930, c. 497, Title III, Sec. 336, 46 Stat. 701; 19 U.S.C. 1336) which provides a procedure for increasing or decreasing tariff rates in order to equalize foreign and domestic costs of production. This procedure does not apply to tariff rates on articles which are the subject of trade agreement concession (46 Stat. 701 quoted):

"EQUALIZATION OF COSTS OF PRODUCTION.

"(a) CHANGE OF CLASSIFICATION OR DUTIES.-- In order to put into force and effect the policy of Congress by this Act intended, the commission (1) upon request of the President, or (2) upon resolution of either or both Houses of Congress, or (3) upon its own motion, or (4) when in the judgment of the commission there is good and sufficient reason therefor, upon application of any interested party, shall investigate the differences in the costs of production of any domestic article and of any like or similar foreign article. In the course of the investigation the commission shall hold hearings and give reasonable public notice thereof, and shall afford reasonable opportunity for parties interested to be present, to produce evidence, and to be heard at such hearings. The commission is authorized to adopt such reasonable procedure and rules and regulations as it deems necessary to execute its functions under this section. The commission shall report to the President the results of the investigation and its findings with respect to such differences in costs of production, If the commission finds it shown by the investigation that the duties expressly fixed by statute do not equalize the differences in the costs of production of the domestic article and the like or similar foreign article when produced in the principal competing country, the commission shall specify in its report such increases or decreases in rates of duty expressly fixed by statute

(including any necessary change in classification) as it finds shown by the investigation to be necessary to equalize such differences. In no case shall the total increase or decrease of such rates of duty exceed 50 percentum of the rates expressly fixed by statute.

"(b) CHANGE TO AMERICAN SELLING PRICE.-- If the Commission finds upon any such investigation that such differences can not be equalized by proceeding as hereinbefore provided, it shall so state in its report to the President and shall specify therein such ad valorem rates of duty based upon the American selling price (as defined in section 402 (g)) of the domestic article, as it finds shown by the investigation to be necessary to equalize such differences. In no case shall the total decrease of such rates of duty exceed 50 per centum of the rates expressly fixed by statute, and no such rate shall be increased.

"(c) PROCLAMATION BY THE PRESIDENT.-- The President shall by proclamation approve the rates of duty and changes in classification and in basis of value specified in any report of the commission under this section, if in his judgment such rates of duty and changes are shown by such investigation of the commission to be necessary to equalize such differences in costs of production.

"(d) EFFECTIVE DATE OF RATES AND CHANGES.-- Commencing thirty days after the date of any presidential proclamation of approval the increased or decreased rates of duty and changes in classification or in basis of value specified in the report of the commission shall take effect.

"(e) ASCERTAINMENT OF DIFFERENCES IN COSTS OF PRODUCTION.--In ascertaining under this section the differences in costs of production, the commission shall take into consideration, in so far as it finds it practicable:

"(1) IN THE CASE OF A DOMESTIC ARTICLE.-- (A) The cost of production as hereinafter in this section defined; (B) transportation costs and other costs incident to delivery to the principal market or markets of the United States for the article; and (C) other relevant factors that constitute an advantage or disadvantage in competition.

"(2) IN THE CASE OF A FOREIGN ARTICLE.--(A) The cost of production as hereinafter in this section defined, or, if the commission finds that such cost is not readily ascertainable, the commission may accept as evidence thereof, or as supplemental thereto, the weighted average of the invoice prices or values for a representative period and/or the average wholesale selling price for a representative period (which price shall be that at which the article is freely offered for sale to all purchasers in the principal market or markets of the principal competing country or countries in the ordinary course of trade and in the usual wholesale quantities in such market or markets); (B) transportation costs and other costs incident to delivery to the principal market or markets of the United States for the article; (C) other relevant factors that constitute an advantage or disadvantage in competition, including advantages granted to the foreign producers by a government, person, partnership, corporation, or association in a foreign country.

"(f) MODIFICATION OF CHANGES IN DUTY.--Any increased or decreased rate of duty or change in classification or in basis of value which has taken effect as above provided may be modified or terminated in the same manner and subject to the same conditions and limitations (including time of taking effect) as is provided in this section in the case of original increases, decreases, or changes.

"(g) PROHIBITION AGAINST TRANSFERS FROM THE FREE LIST TO THE DUTIABLE LIST OR FROM THE DUTIABLE LIST TO THE FREE LIST.--Nothing in this section shall be construed to authorize a transfer of an article from the dutiable list to the free list or from the free list to the dutiable list, nor a change in form of duty. Whenever it is provided in any paragraph of Title I of this Act, or in any amendatory Act, that the duty or duties shall not exceed a specified ad valorem rate upon the articles provided for in such paragraph, no rate determined under the provisions of this section upon such articles shall exceed the maximum ad valorem rate so specified.

"(h) DEFINITIONS.--For the purpose of this section--

"(1) The term 'domestic article' means an article wholly or in part the growth or product of the United States; and the term 'foreign article' means an article wholly or in part the growth or product of a foreign country.

"(2) The term 'United States' includes the several States and Territories and the District of Columbia.

"(3) The term 'foreign country' means any empire, country, dominion, colony, or protectorate, or any subdivision or subdivisions thereof (other than the United States and its possesssions).

"(4) The term 'cost of production', when applied with respect to either a domestic article or a foreign article, includes, for a period which is representative of conditions in production of the article: (A) The price or cost of materials, labor costs, and other direct charges incurred in the production of the article and in the processes or methods employed in its production; (B) the usual general expenses, including charges for depreciation or depletion which are representative of the equipment and property employed in the production of the article and charges for rent or interest which are representative of the cost of obtaining capital or instruments of production; and (C) the cost of containers and coverings of whatever nature, and other costs, charges, and expenses incident to placing the article in condition packed ready for delivery.

"(i) RULES AND REGULATIONS OF PRESIDENT.--The President is authorized to make all needful rules and regulations for carrying out his functions under the provisions of this section.

"(j) RULES AND REGULATIONS OF SECRETARY OF TREASURY.--The Secretary of the Treasury is authorized to make such rules and regulations as he may deem necessary for the entry and declaration of foreign articles of the class or kind of articles with respect to which a change in basis of value has been made under the provisions of subdivision (b) of this section, and for the form of invoice required at time of entry.

"(k) INVESTIGATIONS PRIOR TO ENACTMENT OF ACT.--All uncompleted investigations instituted prior to the approval of this Act under the provisions of section 315 of the Tariff Act of 1922, including investigations in which the President has not proclaimed changes in classification or in basis of value or increases or decreases in rates of duty, shall be dismissed without prejudice; but the information and evidence secured by the commission in any such investigation may be given due consideration in any investigation instituted under the provisions of this section."

APPENDIX 31

TARIFF ACT OF 1930, SECTION 337

Subject Matter of Appendix: Section 337 of the Tariff Act of 1930 (June 17, 1930, c. 497, Title III, Sec. 337, 46 Stat. 703; 19 U.S.C. 1337) which authorizes the President to impose additional duties on products in the importation or sale of which the owner, importer, etc. is found to have engaged in unfair competition the effect of which is to destroy or substantially injure domestic industry (46 Stat. 703):

"UNFAIR PRACTICES IN IMPORT TRADE.

"(a) UNFAIR METHODS OF COMPETITION DECLARED UNLAWFUL.--Unfair methods of competition and unfair acts in the importation of articles into the United States, or in their sale by the owner, importer, consignee, or agent of either, the effect or tendency of which is to destroy or substantially injure an industry, efficiently and economically operated, in the United States, or to prevent the establishment of such an industry, or to restrain or monopolize trade and commerce in the United States, are hereby declared unlawful, and when found by the President to exist shall be dealt with, in addition to any other provisions of law, as hereinafter provided.

"(b) INVESTIGATIONS OF VIOLATIONS BY COMMISSION.--To assist the President in making any decisions under this section the commission is hereby authorized to investigate any alleged violation hereof on complaint under oath or upon its initiative.

"(c) HEARINGS AND REVIEW.--The commission shall make such investigation under and in accordance with such rules as it may promulgate and give such notice and afford such hearing, and when deemed proper by the commission such rehearing, with opportunity to offer evidence, oral or written, as it may deem sufficient

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for a full presentation of the facts involved in such investigation. The testimony in every such investigation shall be reduced to writing, and a transcript thereof with the findings and recommendation of the commission shall be the official record of the proceedings and findings in the case, and in any case where the findings in such investigation show a violation of this section, a copy of the findings shall be promptly mailed or delivered to the importer or consignee of such articles. Such findings, if supported by evidence, shall be conclusive, except that a rehearing may be granted by the commission and except that, within such time after said findings are made and in such manner as appeals may be taken from decisions of the United States Customs Court, an appeal may be taken from said findings upon a question or questions of law only to the United States Court of Customs and Patent Appeals by the importer or consignee of such articles. If it shall be shown to the satisfaction of said court that further evidence should be taken, and that there were reasonable grounds for the failure to adduce such evidence in the proceedings before the commission, said court may order such additional evidence to be taken before the commission in such manner and upon such terms and conditions as to the court may seem proper. The commission may modify its findings as to the facts or make new findings by reason of additional evidence, which, if supported by evidence, shall be conclusive as to the facts except that within such time and in such manner an appeal may be taken as aforesaid upon a question or questions of law only. The judgment of said court shall be final.

"(d) TRANSMISSION OF FINDINGS TO PRESIDENT.--The final findings of the commission shall be transmitted with the record to the President.

"(e) EXCLUSION OF ARTICLES FROM ENTRY.--Whenever the existence of any such unfair method or act shall be established to the satisfaction of the President he shall direct that the articles concerned in such unfair methods or acts, imported by any person violating the provisions of this Act, shall be excluded from entry into the United States, and upon information of such action by the President, the Secretary of the Treasury shall, through the proper officers, refuse such entry. The decision of the President shall be conclusive.

"(f) ENTRY UNDER BOND.--Whenever the President has reason to believe that any article is offered or sought to be offered for entry into the United States in violation of this section but has not information sufficient to satisfy him thereof, the Secretary of the Treasury shall, upon his request in writing, forbid entry thereof until such investigation as the President may deem necessary shall be completed; except that such articles shall be entitled to entry under bond prescribed by the Secretary of the Treasury.

"(g) CONTINUANCE OF EXCLUSION.--Any refusal of entry under this section shall continue in effect until the President shall find and instruct the Secretary of the Treasury that the conditions which led to such refusal of entry no longer exist.

"(h) DEFINITION.--When used in this section and in sections 338 and 340, the term 'United States' includes the several States and Territories, the District of Columbia, and all possessions of the United States except the Philippine Islands, the Virgin Islands, American Samoa, and the island of Guam."

Note the following addition to the above section by July 2, 1940, c. 515, 54 Stat. 724; (19 U.S.C. 1337a):

"AN ACT

To limit the importation of products made, produced, processed, or mined under process covered by unexpired valid United States patents, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the importation hereafter for use, sale, or exchange of a product made, produced, processed, or mined under or by means of a process covered by the claims of any unexpired valid United States letters patent, whether issued heretofore or hereafter, shall have the same status for the purposes of section 337 of the Tariff Act of 1930 as the importation of any product or article covered by the claims of any unexpired valid United States letters patent."

APPENDIX 32

TARIFF ACT OF 1930, SECTION 338

Subject Matter of Appendix: Section 338 of the Tariff Act of 1930 (June 17, 1930, c. 497, Title III, Sec. 338, 46 Stat. 704; 19 U.S.C. 1338) which authorizes the President to proclaim additional duties with respect to products of foreign countries which impose discriminatory laws, charges, etc. against U.S. products; and a similar provision of the Act of 1890 which is still in force (Aug. 30, 1890, c. 839, Sec. 5, 26 Stat. 415; 19 U.S.C. 181):

a) Sec. 338 of Tariff Act of 1930:

"DISCRIMINATION BY FOREIGN COUNTRIES.

"(a) ADDITIONAL DUTIES.--The President when he finds that the public interest will be served thereby shall by proclamation specify and declare new or additional duties as hereinafter provided upon articles wholly or in part the growth or product of, or imported in a vessel of, any foreign country whenever he shall find as a fact that such country--

"(1) Imposes, directly or indirectly, upon the disposition in or transportation in transit through or reexportation from such country of any article wholly or in part the growth or product of the United States any unreasonable charge, exaction, regulation, or limitation which is not equally enforced upon the like articles of every foreign country; or

"(2) Discriminates in fact against the commerce of the United States, directly or indirectly, by law or administrative regulation or practice, by or in respect to any customs, tonnage, or port duty, fee, charge, exaction, classification, regulation, condition, restriction or prohibition, in such manner as to place

the commerce of the United States at a disadvantage compared with the commerce of any foreign country.

"(b) EXCLUSION FROM IMPORTATION.--If at any time the President shall find it to be a fact that any foreign country has not only discriminated against the commerce of the United States, as aforesaid, but has, after the issuance of a proclamation as authorized in subdivision (a) of this section, maintained or increased its said discriminations against the commerce of the United States, the President is hereby authorized, if he deems it consistent with the interests of the United States, to issue a further proclamation directing that such products of said country or such articles imported in its vessels as he shall deem consistent with the public interests shall be excluded from importation into the United States.

"(c) APPLICATION OF PROCLAMATION.--Any proclamation issued by the President under the authority of this section shall, if he deems it consistent with the interests of the United States, extend to the whole of any foreign country or may be confined to any subdivision or subdivisions thereof; and the President shall, whenever he deems the public interests require, suspend, revoke, supplement, or amend any such proclamation.

"(d) DUTIES TO OFFSET COMMERCIAL DISADVANTAGES.--Whenever the President shall find as a fact that any foreign country places any burden or disadvantage upon the commerce of the United States by any of the unequal impositions or discriminations aforesaid, he shall, when he finds that the public interest will be served thereby, by proclamation specify and declare such new or additional rate or rates of duty as he shall determine will offset such burden or disadvantage, not to exceed 50 per centum ad valorem or its equivalent, on any products of, or on articles imported in a vessel of, such foreign country; and thirty days after the date of such proclamation there shall be levied, collected, and paid upon the article enumerated in such proclamation when imported into the United States from such foreign country such new or additional rate or rates of duty; or, in case of articles declared subject to exclusion from importation into the United States under the provisions of subdivision (b) of this section, such articles shall be excluded from importation.

"(e) DUTIES TO OFFSET BENEFITS TO THIRD COUNTRY.--Whenever the President shall find as a fact that any foreign country imposes any unequal imposition or discrimination as aforesaid upon the commerce of the United States, or that any benefits accrue or are likely to accrue to any industry in any foreign country by reason of any such imposition or discrimination imposed by any foreign country other than the foreign country in which such industry is located, and whenever the President shall determine that any new or additional rate or rates of duty or any prohibition hereinbefore provided for do not effectively remove such imposition or discrimination and that any benefits from any such imposition or discrimination accrue or are likely to accrue to any industry in any foreign country, he shall, when he finds that the public interest will be served thereby, by proclamation specify and declare such new or additional rate or rates of duty upon the articles wholly or in part the growth or product of any such industry as he shall determine will offset such benefits, not to exceed 50 per centum ad valorem or its equivalent, upon importation from any foreign country into the United States of such articles; and on and after thirty days after the date of any such proclamation such new or additional rate or rates of duty so specified and declared in such proclamation shall be levied, collected, and paid upon such articles.

"(f) FORFEITURE OF ARTICLES.--All articles imported contrary to the provisions of this section shall be forfeited to the United States and shall be liable to be seized, prosecuted, and condemned in like manner and under the same regulations, restrictions, and provisions as may from time to time be established for the recovery, collection, distribution, and remission of forfeitures to the United States by the several revenue laws. Whenever the provisions of this Act shall be applicable to importations into the United States of articles wholly or in part the growth or product of any foreign country, they shall be applicable thereto whether such articles are imported directly or indirectly.

"(g) ASCERTAINMENT BY COMMISSION OF DISCRIMINATIONS.--It shall be the duty of the commission to ascertain and at all times to be informed whether any of the discriminations against the commerce of the United States enumerated in subdivisions (a), (b),

and (e) of this section are practiced by any country; and if and when such discriminatory acts are disclosed, it shall be the duty of the commission to bring the matter to the attention of the President, together with recommendations.

"(h) RULES AND REGULATIONS OF SECRETARY OF TREASURY.--The Secretary of the Treasury with the approval of the President shall make such rules and regulations as are necessary for the execution of such proclamations as the President may issue in accordance with the provisions of this section.

"(i) DEFINITION.--When used in this section the term 'foreign country' means any empire, country, dominion, colony or protectorate, or any subdivision or subdivisions thereof (other than the United States and its possessions), within which separate tariff rates or separate regulations of commerce are enforced."

b) Sec. 5 of Act of 1890 (19 U.S.C. 181 quoted):

EXCLUSION OF IMPORTS FROM COUNTRIES MAKING DISCRIMINATIONS.--Whenever the President shall be satisfied that unjust discriminations are made by or under the authority of any foreign state against the importation to or sale in such foreign state of any product of the United States, he may direct that such products of such foreign state so discriminating against any product of the United States as he may deem proper shall be excluded from importation to the United States; and in such case he shall make proclamation of his direction in the premises, and therein name the time when such direction against importation shall take effect, and after such date the importation of the articles named in such proclamation shall be unlawful. The President may at any time revoke, modify, terminate, or renew any such direction as, in his opinion, the public interest may require. (Aug. 30, 1890, c. 839, § 5, 26 Stat. 415.)

APPENDIX 33

TARIFF ACT OF 1930, SECTIONS 516 a-b

Subject Matter of Appendix: Sections 516 (a) and (b) of the Tariff Act of 1930 as amended (June 17, 1930, c. 497, Title IV, Sec. 516a, 46 Stat. 735; 19 U.S.C. 1516a; and June 25, 1938, c. 579, Sec. 17a, 52 Stat. 1084; 19 U.S.C. 1516 b) which prescribe a procedure whereby American producers may protest declared values which they feel to be too low and to appeal from and protest classifications and rate of duty which they feel to be improper:

a) Act of 1930, Sec. 516a:

"APPEAL OR PROTEST BY AMERICAN PRODUCERS.

"(a) VALUE.--Whenever an American manufacturer, producer, or wholesaler believes that the appraised value of any imported merchandise of a class or kind manufactured, produced, or sold at wholesale by him is too low, he may file with the Secretary of the Treasury a complaint setting forth the value at which he believes the merchandise should be appraised and the facts upon which he bases his belief. The Secretary shall thereupon transmit a copy of such complaint to the appraiser at each port of entry where the merchandise is usually imported. Until otherwise directed by the Secretary, the appraiser shall report each subsequent importation of the merchandise giving the entry number, the name of the importer, the appraised value, and his reasons for the appraisement. If the Secretary does not agree with the action of the appraiser, he shall instruct the collector to file an appeal for a reappraisement as provided in section 501 of this Act, and such manufacturer, producer, or wholesaler shall have the right to appear and to be heard as a party in interest under such rules as the United States Customs Court may prescribe. The

Secretary shall notify such manufacturer, producer, or wholesaler of the action taken by such appraiser, giving the port of entry, the entry number, and the appraised value of such merchandise and the action he has taken thereon. If the appraiser advances the entered value of merchandise upon the information furnished by the American manufacturer, producer, or wholesaler, and an appeal is taken by the consignee, such manufacturer, producer, or wholesaler shall have the right to appear and to be heard as a party in interest, under such rules as the United States Customs Court may prescribe. If the American manufacturer, producer, or wholesaler is not satisfied with the action of the Secretary, or the action of the appraiser thereon, he may file, within thirty days after the date of the mailing of the Secretary's notice, an appeal for a reappraisment in the same manner and with the same effect as an appeal by a consignee under the provisions of section 501 of this Act." (p. 735)

b) Act of 1940, Secs. 17a-c:

"(a) Subsection (b) of section 516 of the Tariff Act of 1930 (U.S.C., 1934 edition, title 19, sec. 1516 (b) is hereby amended to read as follows:

'(b) Classification.--The Secretary of the Treasury shall, upon written request by an American manufacturer, producer, or wholesaler, furnish the classification of, and the rate of duty, if any, imposed upon, designated imported merchandise of a class or kind manufactured, produced, or sold at wholesale by him. If such manufacturer, producer, or wholesaler believes that the proper rate of duty is not being assessed, he may file a complaint with the Secretary, setting forth a description of the merchandise, the classification, and the rate or rates of duty he believes proper, and the reasons for his belief. If the Secretary decides that the classification of, or rate of duty assessed upon, the merchandise is not correct, he shall notify the collectors as to the proper classification and rate of duty and shall so inform the complainant, and such rate of duty shall be assessed upon all such merchandise entered for consumption or withdrawn from warehouse for consumption after thirty days after the date such notice to the collectors is published in the weekly Treasury Decisions. If the Secretary decides

that the classification and rate of duty are correct, he shall so inform the complainant. If dissatisfied with the decision of the Secretary, the complainant may file with the Secretary, not later than thirty days after the date of such decision, notice that he desires to protest the classification of, or rate of duty assessed upon, the merchandise. Upon receipt of such notice from the complainant, the Secretary shall cause publication to be made of his decision as to the proper classification and rate of duty and of the complainant's desire to protest, and shall thereafter furnish the complainant with such information as to the entries and consignees of such merchandise, entered after the publication of the decision of the Secretary at the port of entry designated by the complaint in his notice of desire to protest, as will enable the complainant to protest the classification of, or rate of duty imposed upon, such merchandise in the liquidation of such an entry at such port. The Secretary shall direct the collector at such port to notify such complainant immediately when the first of such entries is liquidated. Within thirty days after the date of mailing to the complainant of notice of such liquidation, the complainant may file with the collector at such port a protest in writing setting forth a description of the merchandise and the classification and rate of duty he believes proper. Notwithstanding such protest is filed, merchandise of the character covered by the published decision of the Secretary, when entered for consumption or withdrawn from warehouse for consumption on or before the date of publication of a decision of the United States Customs Court or of the United States Court of Customs and Patent Appeals, rendered under the provisions of subsection (c) of this section, not in harmony with the published decision of the Secretary, shall be classified and the entries liquidated in accordance with such decision of the Secretary, and, except as otherwise provided in this Act, the liquidations of such entries shall be final and conclusive upon all parties. If the protest of the complainant is sustained in whole or in part by a decision of the United States Customs Court or of the United States Court of Customs and Patent Appeals, merchandise of the character covered by the published decision of the Secretary, which is entered for consumption or withdrawn from warehouse for consumption after the

date of publication of such court decision, shall be subject to classification and assessment of duty in accordance with the final judicial decision on the complainant's protest, and the liquidation of entries covering such merchandise so entered or withdrawn shall be suspended until final disposition is made of such protest, whereupon such entries shall be liquidated, or if necessary, reliquidated in accordance with such final decision. Every proceeding arising under this subsection shall be given precedence over other cases on the dockets of the United States Customs Court and the United States Court of Customs and Patent Appeals, and shall be assigned for hearing and trial at the earliest practicable date and expedited in every way.'

(b) The provisions of subsection (b) of section 516 of the Tariff Act of 1930, as amended by this Act, shall apply only in the case of complaints filed after the effective date of this Act. The provisions of subsection (b) of section 516 of the Tariff Act of 1930, as in force prior to the effective date of this Act, shall continue in force with respect to any proceedings commenced by the filing of a complaint thereunder, except that upon the expiration of thirty days after the effective date of this Act, or upon the expiration of thirty days after the date of a decision of the Secretary adverse to the complainant, whichever is the later, any such proceedings in which a protest has not been duly filed shall be deemed to have been terminated unless the complainant shall have filed with the Secretary after the effective date of this Act a notice that he desires to protest the classification of, or rate of duty assessed upon, the merchandise.

(c)* The provisions of subsection (b) of section 516 of the Tariff Act of 1930, as amended by this Act, shall not apply with respect to any article of a class or kind which is named or described in any obligation undertaken by the United States in a foreign trade agreement entered into under section 350 of the Tariff Act of 1930 (U.S.C., 1934 edition, title 19, sec. 1351)."

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* Subsection (c) was repealed by the Trade Agreements Extension Act of 1951 (June 16, 1951, c. 141, Sec. 9a, 65 Stat. 75)

APPENDIX 34

THE ANTI-DUMPING ACT OF 1921

Subject Matter of Appendix: The Anti-Dumping Act of 1921 (May 27, 1921, c. 14, Secs. 201-212, 42 Stat. 11; 19 U.S.C. 160-172) which authorizes the imposition of a special anti-dumping duty upon finding by the Secretary of the Treasury that a domestic industry is being injured by reason of the importation into the United States of a kind or class of foreign merchandise (42 Stat. 11):

> "SEC. 201. (a) That whenever the Secretary of the Treasury (hereinafter in this Act called the 'Secretary') after such investigation as he deems necessary, finds that an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation into the United States of a class or kind of foreign merchandise, and that merchandise of such class or kind is being sold or is likely to be sold in the United States or elsewhere at less than its fair value, then he shall make such finding public to the extent he deems necessary, together with a description of the class or kind of merchandise to which it applies in such detail as may be necessary for the guidance of the appraising officers.
>
> "(b) Whenever, in the case of any imported merchandise of a class or kind as to which the Secretary has not so made public a finding, the appraiser or person acting as appraiser has reason to believe or suspect, from the invoice or other papers or from information presented to him, that the purchase price is less, or that the

exporter's sales price is less or likely to be less, than the foreign market value (or, in the absence of such value, than the cost of production) he shall forthwith, under regulations prescribed by the Secretary, notify the Secretary of such fact and withhold his appraisement report to the collector as to such merchandise until the further order of the Secretary, or until the Secretary has made public a finding as provided in subdivision (a) in regard to such merchandise.

SPECIAL DUMPING DUTY.

"SEC. 202. (a) That in the case of all imported merchandise, whether dutiable or free of duty, of a class or kind as to which the Secretary has made public a finding as provided in section 201, and as to which the appraiser or person acting as appraiser has made no appraisement report to the collector before such finding has been so made public, if the purchase price or the exporter's sales price is less than the foreign market value (or, in the absence of such value, than the cost of production) there shall be levied, collected, and paid, in addition to the duties imposed thereon by law, a special dumping duty in an amount equal to such difference.

"(b) If it is established to the satisfaction of the appraising officers that the amount of such difference between the purchase price and the foreign market value is wholly or partly due to the fact that the wholesale quantities, in which such or similar merchandise is sold or freely offered for sale to all purchasers for exportation to the United States in the ordinary course of trade, are greater than the wholesale quantities in which such or similar merchandise is sold or freely offered for sale to all purchasers in the principal markets of the country of exportation in the ordinary course of trade for home consumption (or, if not so sold or offered for sale for home consumption, then for exportation to countries other than the United States), then due allowance shall be made therefor in determining the foreign market value for the purposes of this section.

"(c) If it is established to the satisfaction of the appraising officers that the amount of such difference between the exporter's sales price and the foreign market value is wholly or partly due to the fact that the wholesale quantities, in which such or similar merchandise is sold or freely offered for sale to all purchasers in the principal markets of the United States in the ordinary course of trade, are greater than the wholesale quantities in which such or similar merchandise is sold or freely offered for sale to all purchasers in the principal markets of the country of exportation in the ordinary course of trade for home consumption (or, if not so sold or offered for sale for home consumption, then for exportation to countries other than the United States), then due allowance shall be made therefor in determining the foreign market value for the purposes of this section.

PURCHASE PRICE.

"SEC. 203. That for the purposes of this title, the purchase price of imported merchandise shall be the price at which such merchandise has been purchased or agreed to be purchased, prior to the time of exportation, by the person by whom or for whose account the merchandise is imported, plus, when not included in such price, the cost of all containers and coverings and all other costs, charges, and expenses incident to placing the merchandise in condition, packed ready for shipment to the United States, less the amount, if any, included in such price, attributable to any additional costs, charges, and expenses, and United States import duties, incident to bringing the merchandise from the place of shipment in the country of exportation to the place of delivery in the United States; and plus the amount, if not included in such price, of any export tax imposed by the country of exportation on the exportation of the merchandise to the United States; and plus the amount of any import duties imposed by the country of exportation which have been rebated, or which have not been collected, by reason of the exportation of the merchandise to the United States; and plus the amount of any taxes imposed in the

country of exportation upon the manufacturer, producer, or seller, in respect to the manufacture, production or sale of the merchandise, which have been rebated, or which have not been collected, by reason of the exportation of the merchandise to the United States.

EXPORTER'S SALES PRICE.

"SEC. 204. That for the purpose of this title the exporter's sales price of imported merchandise shall be the price at which such merchandise is sold or agreed to be sold in the United States, before or after the time of importation, by or for the account of the exporter, plus, when not included in such price, the cost of all containers and coverings and all other costs, charges, and expenses incident to placing the merchandise in condition, packed ready for shipment to the United States, less (1) the amount, if any, included in such price, attributable to any additional costs, charges, and expenses, and United States import duties, incident to bringing the merchandise from the place of shipment in the country of exportation to the place of delivery in the United States, (2) the amount of the commissions, if any, for selling in the United States the particular merchandise under consideration, (3) an amount equal to the expenses, if any, generally incurred by or for the account of the exporter in the United States in selling identical or substantially identical merchandise, and (4) the amount of any export tax imposed by the country of exportation on the exportation of the merchandise to the United States; and plus the amount of any import duties imposed by the country of exportation which have been rebated, or which have not been collected, by reason of the exportation of the merchandise to the United States; and plus the amount of any taxes imposed in the country of exportation upon the manufacturer, producer, or seller in respect to the manufacture, production, or sale of the merchandise, which have been rebated, or which have not been collected, by reason of the exportation of the merchandise to the United States.

FOREIGN MARKET VALUE.

"SEC. 205. That for the purposes of this title the foreign market value of imported merchandise shall be the price, at the time of exportation of such merchandise to the United States, at which such or similar merchandise is sold or freely offered for sale to all purchasers in the principal markets of the country from which exported, in the usual wholesale quantities and in the ordinary course of trade for home consumption (or, if not so sold or offered for sale for home consumption, then for exportation to countries other than the United States), plus, when not included in such price, the cost of all containers and coverings and all other costs, charges, and expenses incident to placing the merchandise in condition packed ready for shipment to the United States, except that in the case of merchandise purchased or agreed to be purchased by the person by whom or for whose account the merchandise is imported, prior to the time of exportation, the foreign market value shall be ascertained as of the date of such purchase or agreement for purchase. In the ascertainment of foreign market value for the purposes of this title no pretended sale or offer for sale, and no sale or offer for sale intended to establish a fictitious market, shall be taken into account.

COST OF PRODUCTION.

"SEC. 206. That for the purposes of this title the cost of production of imported merchandise shall be the sum of --

"(1) The cost of materials of, and of fabrication, manipulation, or other process employed in manufacturing or producing, identical or substantially identical merchandise, at a time preceding the date of shipment of the particular merchandise under consideration which would ordinarily permit the manufacture or production of the particular merchandise under consideration in the usual course of business;

"(2) The usual general expenses (not less than 10 per centum of such cost) in the case of identical or substantially identical merchandise;

"(3) The cost of all containers and coverings and all other costs, charges, and expenses incident to placing the particular merchandise under consideration in condition, packed ready for shipment to the United States; and

"(4) An addition for profit (not less than 8 per centum of the sum of the amounts found under paragraphs (1) and (2))equal to the profit which is ordinarily added, in the case of merchandise of the same general character as the particular merchandise under consideration, by manufacturers or producers in the country of manufacture or production who are engaged in the same general trade as the manufacturer or producer of the particular merchandise under consideration.

EXPORTER.

"SEC. 207. That for the purposes of this title the exporter of imported merchandise shall be the person by whom or for whose account the merchandise is imported into the United States;

"(1) If such person is the agent or principal of the exporter, manufacturer, or producer; or

"(2) If such person owns or controls, directly or indirectly, through stock ownership or control or otherwise, any interest in the business of the exporter, manufacturer, or producer; or

"(3) If the exporter, manufacturer, or producer owns or controls, directly or indirectly, through stock ownership or control or otherwise, any interest in any business conducted by such person; or

"(4) If any person or persons, jointly or severally, directly or indirectly, through stock ownership or control or otherwise, own or control in the aggregate 20 per centum or more of the voting power or control in the business carried on by the person by whom or for whose account the merchandise is imported into the United States, and also 20 per centum or more of such power or control in the business of the exporter, manufacturer, or producer.

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OATHS AND BONDS ON ENTRY.

"SEC. 208. That in the case of all imported merchandise, whether dutiable or free of duty, of a class or kind as to which the Secretary has made public a finding as provided in section 201, and delivery of which has not been made by the collector before such finding has been so made public, unless the person by whom or for whose account such merchandise is imported makes oath before the collector, under regulations prescribed by the Secretary, that he is not an exporter, or unless such person declares under oath at the time of entry, under regulations prescribed by the Secretary, the exporter's sales price of such merchandise, it shall be unlawful for the collector to deliver the merchandise until such person has made oath before the collector, under regulations prescribed by the Secretary, that the merchandise has not been sold or agreed to be sold by such person, and has given bond to the collector, under regulations prescribed by the Secretary, with sureties approved by the collector, in an amount equal to the estimated value of the merchandise, conditioned: (1) that he will report to the collector the exporter's sales price of the merchandise within 30 days after such merchandise has been sold or agreed to be sold in the United States, (2) that he will pay on demand from the collector the amount of special dumping duty, if any, imposed by this title upon such merchandise, and (3) that he will furnish to the collector such information as may be in his possession and as may be necessary for the ascertainment of such duty, and will keep such records as to the sale of such merchandise as the Secretary may by regulation prescribe.

DUTIES OF APPRAISERS.

"SEC. 209. That in the case of all imported merchandise, whether dutiable or free of duty, of a class or kind as to which the Secretary has made public a finding as provided in section 201, and as to which the appraiser or person acting as appraiser has made no appraisement report to the collector before such finding has been so made public, it shall be the duty of each appraiser or person acting as appraiser, by all reasonable ways and means to

ascertain, estimate, and appraise (any invoice or affidavit thereto or statement of cost of production to the contrary notwithstanding) and report to the collector the foreign market value or the cost of production, as the case may be, the purchase price, and the exporter's sales price,and any other facts which the Secretary may deem necessary for the purposes of this title.

APPEALS AND PROTESTS.

"SEC. 210. That for the purposes of this title the determination of the appraiser or person acting as appraiser as to the foreign market value or the cost of production, as the case may be, the purchase price, and the exporter's sales price, and the action of the collector in assessing special dumping duty, shall have the same force and effect and be subject to the same right of appeal and protest, under the same conditions and subject to the same limitations; and the general appraisers, the Board of General Appraisers, and the Court of Customs Appeals shall have the same jurisdiction, powers, and duties in connection with such appeals and protests as in the case of appeals and protests relating to customs duties under existing law.

DRAWBACKS.

"SEC. 211. That the special dumping duty imposed by this title shall be treated in all respects as regular customs duties within the meaning of all laws relating to the drawback of customs duties.

SHORT TITLE.

"SEC. 212. That this title may be cited as the 'Antidumping Act, 1921.'" (pp. 11-15)

June 17, 1930, c. 497, Title IV, Sec. 651 d (46 Stat. 762):

"(d) Certain Acts Not Affected.--Nothing in this Act [Tariff Act of 1930] shall be construed to amend or repeal any of the following provisions of law:

. . . . .

"(5) The Antidumping Act, 1921."

APPENDIX 35

TARIFF COMMISSION REGULATIONS - TARIFF ACT OF 1930, SECTION 336

Subject Matter of Appendix: The regulations of the U. S. Tariff Commission which establish its rules of procedure in investigations under Sec. 336 of the Tariff Act of 1930 authorizing tariff increases or decreases to equalize foreign and domestic costs of production (19 C.F.R. 201.8, 202):

"§ 201.8. Applications for investigation under section 336 of the Tariff Act of 1930, under section 504 of the Philippine Trade Act of 1946, and under section 7 of the Trade Agreements Extension Act of 1951, and complaints under section 337 of the Tariff Act of 1930. (a) All applications for investigations under section 336 of the Tariff Act of 1930, under section 504 of the Philippine Trade Act of 1946, or under section 7 of the Trade Agreements Extension Act of 1951, and complaints under section 337 of the Tariff Act of 1930, must be filed with the Secretary, United States Tariff Commission, Washington 25, D.C. All copies of applications, complaints, and other papers filed with the Commission in any such investigation must be identified on the first page thereof with the name of the person or firm on whose behalf they are filed.

(b) Receipt by the Commission of an application for investigation or of a complaint properly filed will be acknowledged by the Secretary of the Commission, and public notice of such receipt will be given in the manner prescribed in § 201.10. In the case of applications under section 7 of the Trade Agreements Extension Act of 1951, notice of receipt thereof may be included in the notice of institution of investigation.

(c) From the time of posting notice of the receipt of an application or of a complaint, such application or complaint, except for confidential

material, will be made available for public inspection at the office of the Commission in Washington, D.C., where it may be read and copied by persons interested.

(d) Applications and complaints may be withdrawn at any time before an investigation pursuant thereto has been instituted or completed by the Commission, but, even if an application or complaint shall have been withdrawn, the Commission may institute or continue an investigation if in its judgment there is good and sufficient reason therefor.

(e) The Commission will notify the applicant or complainant of its decision to order or not to order the investigation requested. In reaching its decision, the Commission will take into consideration the information furnished by the applicant or complainant, the information assembled by its staff, and the information furnished by other persons either in favor of or opposed to the institution of an investigation.

Part 202--Investigations as to Costs of Production

Sec.
202.1 Applicability of rules under section 336.
202.2 Applications.
202.3 Type of information to be developed at hearing.
202.4 Briefs.
202.5 Reports.

Authority: §§ 202.1 to 202.5 issued under sec. 336, 46 Stat. 701; 19 U.S.C. 1336.

Source: §§ 202.1 to 202.5 appear at 14 F.R.7291, Dec. 6, 1949.

§ 202.1 Applicability of rules under section 336. The rules under this part are specifically applicable to investigations for the purposes of section 336 of the Tariff Act of 1930 (46 Stat. 701; 19 U.S.C. 1336), and apply in addition to the pertinent rules of general application set forth in Part 201 of this chapter.

Note: The provisions of section 336 of the Tariff Act of 1930 may not be applied to any article with respect to the importation of which into the United States a foreign trade agreement has been concluded under the Trade Agreements Act of 1934, as amended (sec. 2 (a), 48 Stat. 944; 19 U.S.C. 1352 (a)).

§ 202.2 Applications. (a) Applications for an investigation for the purposes of section 336 may be made by any person, partnership, association, or corporation.

(b) Applications for investigation should be typewritten or printed and five clear copies must be submitted, but applications need not be drawn in any particular form and need not be under oath. Applications must be signed by or on behalf of the applicant and should state the name, address, and nature of business of the applicant.

(c) Applications must clearly state that they are requests for investigations and must name or describe the commodity concerning which an investigation is sought. They should also refer to the tariff provision or provisions applicable to such commodity and should state whether an increase or a decrease in the rate of duty is sought.

(d) The applicant must file with his application such supporting information as may be in his possession. The filing of such information is required to aid the Commission in determining whether to order the investigation, and does not render unnecessary the investigation itself. As far as practicable, information of the character indicated below should be furnished:

(1) Comparability of the domestic and foreign articles and the degree of competition between them.

(2) Trend of domestic production and sales and trend of imports.

(3) Trend of cost of production and prices in recent years.

(4) Evidence of difference between domestic and foreign costs of production of the articles

involved. (When considered with reference to section 336, the term 'cost of production' includes transportation costs and other costs incident to the delivery of the articles to the principal market or markets of the United States.)

(5) Areas of greatest competition between the imported and domestic products and the principal market or markets in the United States.

(6) Other relevant factors that constitute, in the opinion of the applicant, an advantage or disadvantage in competition, and any other information which the applicant believes the Commission should consider.

Cross Reference: For rule regarding submission of confidential information, see § 201.6 (b) of this chapter.

§ 202.3 Type of information to be developed at hearing. (a) Without excluding other factors, but with a view to assisting parties interested to present information necessary for the formulation of findings required by the statute, the Commission will expect attention in the hearing to be concentrated upon facts relating to:

(1) The competitive strength of the foreign and domestic articles in the markets of the United States.

(2) The degree of likeness or similarity between grades, classes, and price groups of the American product and the imported article.

(3) Costs of production and importation. Statements of average cost of production, domestic and, so far as known, foreign, may be submitted subject to verification and review in the Commission's investigation. Such statements should include not only the direct costs for materials and labor, commonly termed prime cost, but also indirect costs such as indirect labor, overhead factory expenses, fixed charges, the portion of general and administrative expense chargeable to manufacture, interest on investment equity, and transportation to markets. For the foreign product the expenses (other than duties) incident

to importation are also important. Any information which may be available bearing on the general levels of domestic and foreign costs of production, the differentials between domestic and foreign producers as to particular elements of cost, and the extent to which invoice or wholesale prices are reliable evidence of foreign costs, will be pertinent.

(4) Other significant advantages or disadvantages in competition.

Cross Reference: For rule regarding submission of confidential information, see § 201.6 (b) of this chapter.

(b) The Commission also seeks information to determine: (1) Principal competing country. (2) Principal American market or markets. (3) Representative period of time for cost inquiry.

(c) Finally, parties interested appearing at public hearings are expected to present definite information rather than generalities and conjectures.

Cross Reference: For rules regarding public notice of investigation and hearings, see §§ 201.10, 201.11 of this chapter.

§ 202.4 Briefs. Briefs of the evidence produced at the hearing and arguments thereon may be presented to the Commission by parties interested who have entered an appearance. Unless otherwise ordered, 10 clear copies typed or printed shall be filed with the Secretary of the Commission within 10 days after the close of the hearing.

Cross Reference: For rules regarding briefs of evidence given by deposition, see § 201.17 (b) of this chapter.

§ 202.5 Reports. After the completion of its investigation, the Commission will incorporate its findings in a report and the report will be transmitted to the President.

APPENDIX 36

TARIFF COMMISSION REGULATIONS -
SECTION 337 OF TARIFF ACT OF 1930

Subject Matter of Appendix: Regulations of the Tariff Commission establishing its rules of procedure under Section 337 of the Tariff Act of 1930 (Unfair Practices in the Import Trade) (19 C.F.R. 203 et seq.)[x]:

"Part 203 - Investigations as to Unfair Practices in Import Trade

Sec.
203.1 Applicability of rules under section 337.
203.2 Complaints.
203.3 Preliminary inquiry.
203.4 Answers to complaints.
203.5 Briefs.
203.6 Record
203.7 Findings.
203.8 Transmittal to President.

AUTHORITY: §§ 203.1 to 203.8 issued under sec. 337, 46 Stat. 703; 19 U.S.C. 1337.

SOURCE: §§ 203.1 to 203.8 appear at 14 F.R. 7292, Dec. 6, 1949.

§ 203.1 Applicability of rules under section 337. The rules under this part are specifically applicable to investigations for the purposes of section 337 of the Tariff Act of 1930 (46 Stat. 703, 54 Stat. 724; 19 U.S.C. 1337, 1337a), and apply in addition to the pertinent rules of general application set forth in Part 201 of this chapter.

§ 203.2 Complaints. (a) Complaint alleging violation of section 337 of the Tariff Act of 1930 may be made by any person, partnership, association, or corporation.

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[x] See also 19 C.F.R. 201.8 quoted in Appendix 35

(b) Complaints must be made under oath but need not be drawn in any particular form. They must be signed by or on behalf of the complainant and must contain the name, address, and nature of business of the complainant and of the person or persons alleged to violate the law. The location of manufacturing plant or plants should also be stated. Complaints must contain a short and simple statement of the facts constituting the alleged unfair methods of competition or unfair acts. Specific instances of alleged unlawful importations or sales should be given.

(c) To the extent possible, complaints must also contain economic data concerning domestic production and distribution, imports and their distribution, and other pertinent facts such as will indicate: (1) That the domestic industry concerned is efficiently and economically operated and that it is being or is likely to be destroyed or substantially injured by the importations or sales in question; (2) that the alleged unlawful acts are preventing the establishment of an efficiently and economically operated domestic industry; or (3) that the alleged unlawful acts are having the effect or tendency to restrain or monopolize trade and commerce in the United States.

CROSS REFERENCE: For rule dealing with confidential information, see § 201.6 of this chapter.

(d) The complaint may be amended or further evidence submitted, in the discretion of the Commission, for good cause shown.

(e) Complainants must submit a clear copy of any complaint or amendment thereto for each person alleged to have violated the provisions of section 337 of the Tariff Act of 1930, and the Commission may require the supplying of additional copies to be served on persons whose alleged violation of section 337 is called to its attention subsequent to the filing of the complaint. In addition, five copies must be submitted for the official use of the Commission.

§ 203.3 Preliminary inquiry. The Commission will make such preliminary inquiry as it shall deem necessary to determine (a) whether the institution of an investigation is warranted and (b) whether the issuance of a temporary order of exclusion from entry (if requested) under section 337 (f) of the Tariff Act of 1930 is warranted.

§ 203.4 Answers to complaints. (a) After an investigation shall have been ordered, and not before, a copy of the complaint will be served by the Commission upon any owner, importer, or consignee, or the agent of any of them, alleged to violate the provisions of section 337 of the Tariff Act of 1930 and such owner, importer, consignee, or agent, shall have 30 days, unless otherwise ordered, in which to make written answer under oath and to show cause, if any there be, why the provisions of section 337 of the Tariff Act of 1930 should not be applied in respect of the alleged unfair methods of competition and unfair acts set forth in the complaint.

(b) Copies of all answers will be served by the Commission upon complainants or upon their attorneys.

(c) The Commission reserves the right to determine whether to send copies of complaints to respondents in foreign countries.

CROSS REFERENCE: For rules regarding public notice of investigation and hearings, see §§ 201.10, 201.11 of this chapter.

§ 203.5 Briefs. (a) The Commission will fix a date on or before which briefs may be submitted, which date will be announced at the close of the hearing. Unless otherwise ordered, 20 clear copies typed or printed shall be filed with the Secretary of the Commission.

(b) Application for extension of time for submitting briefs shall be filed in writing with the Secretary of the Commission at least 10 days before the date set for submitting briefs and shall set forth fully the reasons for such application.

(c) Copies of all briefs shall be served by the Commission upon all interested parties who have entered appearances or upon their representatives of record.

§ 203.6 Record. (a) A transcript of the testimony in an investigation, together with the findings and recommendations of the Commission, shall be the official record of the proceedings and findings in the investigation.

(b) Confidential material accepted by the Commission as confidential and so marked, will not be considered a part of the record sent to the court in the case of an appeal.

CROSS REFERENCE: For rule regarding submission of confidential information, see § 201.6 (b) of this chapter.

§ 203.7 Findings. (a) Upon the conclusion of an investigation, the Commission will formulate findings based thereon. When the findings show a violation of the statute, a copy of the findings certified by the Secretary under the seal of the Commission will be delivered or sent by registered mail promptly to the owner, importer, or consignee or to the agent of any of them, found to be guilty of such violation.

(b) Attention is directed to the provision of section 337 (c) authorizing rehearings by the Commission on questions of either fact or law and appeals by the importer or consignee within 60 days to the United States Court of Customs and Patent Appeals upon a question or questions of law only. If no appeal is filed within the time prescribed and no rehearing granted, or if appeal is filed or rehearing granted and the Commission's findings are ultimately affirmed, the findings are then considered final.

§ 203.8 Transmittal to President. The final findings of the Commission will be transmitted with the record to the President for consideration and for action under the statute."

APPENDIX 37

CUSTOMS BUREAU REGULATIONS - SECTION 516 a - b OF TARIFF ACT OF 1930

Subject Matter of Appendix: Regulations of the Customs Bureau establishing its rules of procedure under Sec. 516 a - b of the Tariff Act of 1930 (Appeals or Protests by American Producers directed at declared value, classification or rate of duty) (19 C.F.R. 17.11):

"§ 17.11 American producers' appeals and protests; procedure. (a) All complaints under section 516, Tariff Act of 1930 as amended, and requests for information as to classifications and rates of duty under subdivision (b) thereof, shall be submitted to the Commissioner of Customs in triplicate. Complaints may be filed by complainants themselves or by duly authorized attorneys or agents on their behalf. A complaint filed by a corporation shall be signed by an officer thereof, and a complaint filed by a copartnership shall be signed by a member thereof. The name of the complainant, his principal place of business, and the fact that he is an American manufacturer, producer, or wholesaler shall be shown. The complaint shall present in detail the information required by section 516, as amended; shall show the class or kind of merchandise manufactured, produced, or sold which is claimed to be similar to the imported merchandise in such detail as will permit the Commissioner to establish the similarity between the domestic and foreign merchandise; and shall contain such information as the complainant may have as to the port or ports at which such merchandise is being imported into the United States. Complaints shall be itemized as to each class or kind of merchandise involved.

(b) All information secured by the collector as to the character and description of merchandise of the kind covered by a complaint, entered after

publication by the Commissioner of his decision as to the proper classification and rate of duty, and samples of such merchandise, shall be made available to the complainant upon application by him to the collector.

(c) Notice of the liquidation of the first of the entries to be liquidated, covering merchandise of a class or kind which would enable the complainant to present the issue desired, shall be given to the complainant by the collector, as required by section 516 (b), Tariff Act of 1930, as amended. If, upon examination of the information secured by the collector as to this entry and inspection of the sample, if any, the complainant believes and the collector agrees that the merchandise or the fact surrounding this importation are not sufficient to raise the issue involved in the complaint, the collector shall then give the complainant notice of the first liquidation thereafter of such an entry as will permit the framing of the issue covered by the complaint, and shall, under the same condition, continue to give such notices for so long as he is of the opinion that the complainant is sincere in his desire to protest.

(d) A complainant shall not be permitted in any case to inspect any documents or papers of the consignee or importer lodged in the customhouse, except upon instructions of the Commissioner.

(e) All appeals for reappraisement and protests filed under section 516. Tariff Act of 1930, as amended, shall be in triplicate."

APPENDIX 38

TRADE AGREEMENTS EXTENSION ACT OF 1951, SECTION 9a

Subject Matter of Appendix: The portion of Section 2a of the Reciprocal Trade Agreements Act of 1934 as amended (June 12, 1934, c. 497, Sec. 2a, 48 Stat. 944; June 16, 1951, c. 141, Section 9a, 65 Stat. 72; 19 U.S.C. 1352a quoted) which makes Section 336 of the Tariff Act of 1930 (cost equalization) inapplicable to articles which are the subject of trade agreement concessions:

> "(a) The provisions of section 1336 [Act Sec. 336] of this title shall not apply to any article with respect to the importation of which into the United States a foreign-trade agreement has been concluded pursuant to Part III of this subtitle, or to any provision of any such agreement. ..."

APPENDIX 39

TRADE AGREEMENTS EXTENSION ACT OF 1951, SECTIONS 3 AND 4

Subject Matter of Appendix: The "peril point" provisions of the Trade Agreements Extension Act of 1951 (June 16, 1951, c. 141, Secs. 3-4, 65 Stat. 72 et seq., 19 U.S.C. 1360-61) which provide a procedure whereby the Tariff Commission, before negotiations looking toward a trade agreement are begun, is required to determine, after investigation and public hearings, and report to the President the limit to which tariff concessions on items involved may be made without causing or threatening serious injury to domestic industry (65 Stat. 72):

> "Sec. 3. (a) Before entering into negotiations concerning any proposed foreign trade agreement under section 350 of the Tariff Act of 1930, as amended, the President shall furnish the United States Tariff Commission (hereinafter in this Act referred to as the 'Commission') with a list of all articles imported into the United States to be considered for possible modification of duties and other import restrictions, imposition of additional import restrictions, or continuance of existing customs or excise treatment. Upon receipt of such list the Commission shall make an investigation and report to the President the findings of the Commission with respect to each such article as to (1) the limit to which such modification, imposition, or continuance may be extended in order to carry out the purpose of such section 350 without causing or threatening serious injury to the domestic industry producing like or directly competitive articles; and (2) if

increases in duties or additional import restrictions are required to avoid serious injury to the domestic industry producing like or directly competitive articles the minimum increases in duties or additional import restrictions required. Such report shall be made by the Commission to the President not later than 120 days after the receipt of such list by the Commission. No such foreign trade agreement shall be entered into until the Commission has made its report to the President or until the expiration of the 120-day period.

(b) In the course of any investigation pursuant to this section the Commission shall hold hearings and give reasonable public notice thereof, and shall afford reasonable opportunity for parties interested to be present, to produce evidence, and to be heard at such hearings."

"Sec. 4. (a) Within thirty days after any trade agreement under section 350 of the Tariff Act of 1930, as amended, has been entered into which, when effective, will (1) require or make appropriate any modification of duties or other import restrictions, the imposition of additional import restrictions, or the continuance of existing customs or excise treatment, which modification, imposition, or continuance will exceed the limit to which such modification, imposition, or continuance may be extended without causing or threatening serious injury to the domestic industry producing like or directly competitive articles as found and reported by the Tariff Commission under section 3, or (2) fail to require or make appropriate the minimum increase in duty or additional import restrictions required to avoid such injury, the President shall transmit to Congress a copy of such agreement together with a message accurately identifying the article with respect to which such limits or minimum requirements are not complied with, and stating his reason for the action taken with respect to such article. If either the Senate or the House of Representatives, or both, are not in session at the time of such transmission, such agreement and message shall be filed with the Secretary of the Senate or the Clerk of the House of Representatives, or both, as the case may be.

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(b) Promptly after the President has transmitted such foreign trade agreement to Congress the Commission shall deposit with the Committee on Ways and Means of the House of Representatives, and the Committee on Finance of the Senate, a copy of the portions of its report to the President dealing with the articles with respect to which such limits or minimum requirements are not complied with.

APPENDIX 40

TRADE AGREEMENTS EXTENSION ACT OF 1951, SECTIONS 6-7

Subject Matter of Appendix: The "escape clause" provisions of the Trade Agreements Extension Act of 1951 (June 16, 1951, c. 141, Secs. 6-7, 65 Stat. 73 et seq.; 19 U.S.C. 1363-1364) which establishes a procedure whereby the Tariff Commission, on application, is required to investigate to determine whether any product upon which a trade agreement concession has been granted, is as a result, in whole or in part, of the duty reflecting such concession, being imported into the United States in such increased quantities, either actual or relative, as to cause or threaten serious injury to domestic industry; and which requires a clause of this nature to be included in future agreements (65 Stat. 73 et seq.):

> Sec. 6. (a) No reduction in any rate of duty, or binding of any existing customs or excise treatment, or other concession hereafter proclaimed under section 350 of the Tariff Act of 1930, as amended, shall be permitted to continue in effect when the product on which the concession has been granted is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported into the United States in such increased quantities, either actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive products.

(b) The President, as soon as practicable, shall take such action as may be necessary to bring trade agreements heretofore entered into under section 350 of the Tariff Act of 1930, as amended, into conformity with the policy established in subsection (a) of this section.

On or before January 10, 1952, and every six months thereafter, the President shall report to the Congress on the action taken by him under this subsection.

Sec. 7. (a) Upon the request of the President, upon resolution of either House of Congress, upon resolution of either the Committee on Finance of the Senate or the Committee on Ways and Means of the House of Representatives, upon its own motion, or upon application of any interested party, the United States Tariff Commission shall promptly make an investigation and make a report thereon not later than one year[x] after the application is made to determine whether any product upon which a concession has been granted under a trade agreement is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported into the United States in such increased quantities, either actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive products.

In the course of any such investigation, whenever it finds evidence of serious injury or threat of serious injury or whenever so directed by resolution of either the Committee on Finance of the Senate or the Committee on Ways and Means of the House of Representatives, the Tariff Commission shall hold hearings giving reasonable public notice thereof and shall afford reasonable opportunity for interested parties to be present, to produce evidence, and to be heard at such hearings.

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[x] Changed to 9 months by Trade Agreements Extension Act of 1953 (Pub. Law 215, 83rd C, 1st Sess., Aug. 7, 1953).

Should the Tariff Commission find, as the result of its investigation and hearings, that a product on which a concession has been granted is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported in such increased quantities, either actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive products, it shall recommend to the President the withdrawal or modification of the concession, its suspension in whole or in part, or the establishment of import quotas, to the extent and for the time necessary to prevent or remedy such injury. Within sixty days, or sooner if the President has taken action under subsection (c) of this section, the Tariff Commission shall transmit to the Committee on Finance of the Senate and the Committee on Ways and Means of the House of Representatives an exact copy of its report and recommendations to the President.

(b) In arriving at a determination in the foregoing procedure the Tariff Commission, without excluding other factors, shall take into consideration a downward trend of production, employment, prices, profits, or wages in the domestic industry concerned, or a decline in sales, an increase in imports, either actual or relative to domestic production, a higher or growing inventory, or a decline in the proportion of the domestic market supplied by domestic producers.

(c) Upon receipt of the Tariff Commission's report of its investigation and hearings, the President may make such adjustments in the rates of duty, impose such quotas, or make such other modifications as are found and reported by the Commission to be necessary to prevent or remedy serious injury to the respective domestic industry. If the President does not take such action within sixty days he shall immediately submit a report to the Committee on Ways and Means of the House and to the Committee on Finance of the Senate stating why he has not made such adjustments or modifications, or imposed such quotas.

(d) When in the judgment of the Tariff Commission no sufficient reason exists for a recommendation to the President that a concession should be withdrawn or modified or a quota established, it shall make and publish a report stating its findings and conclusions.

APPENDIX 41

TARIFF COMMISSION REGULATIONS - SECTION 7, TRADE AGREEMENTS EXTENSION ACT OF 1951

Subject Matter of Appendix: Regulations of the Tariff Commission which establish its rules of procedure under the "escape clause" provisions of the Trade Agreements Extension Act of 1951 (Sec. 7) (19 C.F.R. 207)[x]:

"Part 207 - Investigations of Injury to Domestic Producers on Account of Imports of Products on Which Trade-Agreement Concessions Have Been Granted

Sec.
207.1 Applicability of rules regarding investigations under section 7, Trade Agreements Extension Act of 1951.
207.2 Purpose of investigation.
207.3 Applications.
207.4 Confidential information.
207.5 Investigations; hearings.
207.6 Briefs.
207.7 Reports.

AUTHORITY: §§ 207.1 to 207.7 issued under sec. 7, Pub. Law 50, 82d Cong.

SOURCE: §§ 207.1 to 207.7 appear at 16 F.R. 10626, Oct. 18, 1951.

Prior Amendments

1949: 14 F.R. 7294, Dec. 6
1951: 16 F.R. 5893, June 21.

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[x] See also 19 C.R.F. 201.8 quoted in Appendix 35

§ 207.1 Applicability of rules regarding investigations under section 7, Trade Agreements Extension Act of 1951. The rules under this part are specifically applicable to investigations for the purposes of section 7 of the Trade Agreements Extension Act of 1951 (Pub. Law 50, 82d Cong.) and apply in addition to the pertinent rules of general application set forth in Part 201 of this chapter.

§ 207.2 Purpose of investigation. The purpose of an investigation under section 7 of the Trade Agreements Extension Act of 1951 is to determine whether an article on which a trade-agreement concession has been granted is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported in such increased quantities, actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive articles.

§ 207.3 Applications. (a) Application for investigation for the purposes of section 7 of the Trade Agreements Extension Act of 1951 may be made by any interested person, partnership, association, or corporation having reason to believe that a product upon which a concession has been granted under a trade agreement is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported into the United States in such increased quantities, either actual or relative, as to cause or threaten serious injury to a domestic industry producing like or directly competitive products. Such applications shall be filed with the Secretary, United States Tariff Commission, Washington 25, D. C.

(b) Applications for such investigations shall be typewritten, duplicated, or printed, and fifteen clear copies must be submitted. They need not be under oath, but must be signed by the applicant or in his behalf by any authorized person, and should state the name, address, and nature of the interest of the applicant.

(c) An application must clearly state that it is for an investigation under section 7 of the Trade Agreements Extension Act of 1951. It must name or describe precisely the product concerning which investigation is

being sought; specify the tariff provision which covers the product; and indicate the duty or other customs treatment which it is claimed is resulting in the importation of the product in question in such increased quantities, actual or relative, as to cause or threaten the alleged serious injury to the domestic industry.

(d) An application must include a statement of the reasons why applicant believes that the product concerning which investigation is requested is, as a result, in whole or in part, of the duty or other customs treatment reflecting a trade-agreement concession, being imported into the United States in such increased quantities, either actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive commodities. In particular, applicant must describe the nature and extent of the injury which he considers is being caused or threatened the domestic industry by reason of the importation of the product in question.

(e) Information of the following character should also be furnished with an application, to the extent that it is readily available to the applicant, and where confidential should be submitted as indicated in § 207.4:

(1) Imports, production, sales, and exports of the commodity for representative periods, including the latest available data. In greater detail, this information would include:

(i) Imports (quantity and value).

(ii) Production (quantity): (a) by the applicant, (b) by the domestic industry.

(iii) Sales (quantity and value): (a) by the applicant, (b) by the domestic industry.

(iv) Exports (quantity and value): (a) by the applicant, (b) by the domestic industry.

(2) Direct labor engaged in the domestic production of the commodity, (i) by the applicant and (ii) by the industry as a whole, indicating the number of persons employed during a normal period of operation in representative years, including the latest available data.

(3) Relation of the receipts of the applicant from the sales of the commodity covered by the application to his total receipts from all commodities or services produced by him for representative years.

(4) Comparability of the domestic and the foreign article and the degree of competition between them, indicating the geographical areas or markets in which the competition is most intensive.

(5) Additional information of factual character, relating to the applicant and to the domestic industry, regarding such matters as: Profits and losses; prices; taxes; wages and other costs of production; subsidies and price-support programs; inventories, and similar data bearing on the position of the applicant and of the domestic industry in competition with the imported article.

(f) In general, statistical data supporting an application should be on an annual calendar-year basis, but should include data for months or quarters following the latest complete year; however, where seasonal and short-term factors and developments are important, quarterly or monthly data should also be furnished.

§ 207.4 Confidential information. All information submitted in confidence should be submitted on separate pages clearly marked 'Confidential'. The Commission may refuse to accept in confidence any particular information which it determines is not entitled to confidential treatment. Information called for in § 207.3 which would disclose individual business data or operations will be accorded confidential treatment by the Commission if submitted in confidence.

CROSS REFERENCE: For general rule regarding confidential information, see § 201.6 of this chapter.

§ 207.5 Investigation; hearings - (a) Institution of investigation. After receipt by the Commission of an application under section 7 of the Trade Agreements Extension Act of 1951, properly filed, an investigation will be promptly instituted. The application, except for confidential material, will then be available for public inspection at the office of the Commission in Washington, D. C., or in the New York office of the Tariff Commission, Customnouse, New York 4, N. Y., where

it may be read and copied by persons interested. Notice of such investigation will be given in the manner prescribed in § 201.10 of this chapter.

(b) Public hearings. Hearings are required by law in investigations under section 7 of the Trade Agreements Extension Act of 1951 whenever the Commission finds evidence of serious injury or threat of serious injury or whenever so directed by resolution of either the Committee on Finance of the Senate or the Committee on Ways and Means of the House of Representatives. No recommendations to the President for action under section 7 of the Trade Agreements Extension Act of 1951 may be made unless a hearing has been held. The Commission will order a public hearing whenever a hearing is required by law or in any other case when in its judgment there is good and sufficient reason therefor. Public notice of hearings ordered will be given in the manner prescribed in § 201.17(b) of this chapter.

§ 207.6 Briefs. Briefs of the evidence produced at the hearings and arguments thereon may be presented to the Commission by parties interested who have entered an appearance. Unless otherwise ordered, fifteen clear copies, typewritten, duplicated, or printed, shall be filed with the Secretary of the Commission within ten days after the close of the hearing.

CROSS REFERENCE: For rules regarding briefs of evidence given by deposition, see § 201.17(b) of this chapter

§ 207.7 Reports - (a) Findings and recommendations to the President. If, as a result of an investigation and hearing under section 7 of the Trade Agreements Extension Act of 1951, the Commission finds that an article on which a trade-agreement concession has been granted is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported in such increased quantities, actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive articles, it will report its findings to the President with appropriate recommendations for the withdrawal or modification of the

concession, its suspension in whole or in part, or the establishment of import quotas, to the extent and for the time necessary to prevent or remedy such injury.

(b) Findings and conclusions in absence of recommendations to the President. If after investigation, either with or without hearing, the Commission determines that no sufficient reason exists for a recommendation to the President for action of any kind specified in paragraph (a) of this section, it will make and publish a report stating its findings and conclusions."

APPENDIX 42

TARIFF COMMISSION INVESTIGATIONS UNDER "ESCAPE CLAUSE" PROCEDURES

Subject Matter of Appendix: Tabulation of all "escape clause" proceedings instituted by private parties, either under executive orders prior to 1951 or the provisions of the Trade Agreements Extension Act of 1951 showing the type of Commodity involved in each proceeding, the date of application, and the disposition and date thereof. Sources of information are Tariff Commission Report No. 174, Second Series (Operation of the Trade Agreements Program, Fourth Report, July 1950 - June 1951) pp. 141-143; the Thirty-Sixth Annual Report of the United States Tariff Commission, 1952 (TC 1.1:952), pp. 16-18; and advice from the offices of the U.S. Tariff Commission, Customhouse, N. Y.:

	Commodity	Date of Application	Disposition
1.	Marrons	April 20, 1948	Dismissed after preliminary inquiry, Aug. 27, 1948
2.	Whiskies and spirits	Sept. 7, 1948	As above, Jan. 3, 1949
3.	Spring Clothespins	Nov. 10, 1948	Full investigation, no change recommended, Dec. 20, 1949

	Commodity	Date of Application	Disposition
4.	Knitted wool berets	Feb. 11, 1949	Dismissed after preliminary inquiry, July 8, 1949
5.	Crude petroleum and petroleum products	Feb. 15, 1949	As above, May 3, 1949
6.	Hops	March 28, 1949	As above, May 11, 1949
7.	Rattan reeds, cane webbing	May 20, 1949	As above, Feb. 17, 1950
8.	Narcissus bulbs	June 9, 1949	As above, Jan. 13, 1950
9.	Sponges	June 14, 1949	As above, July 22, 1949
10.	Wool and cotton knit gloves and mittens	Aug. 5, 1949	Application withdrawn, July 5, 1951
11.	Knitted woolen berets (2nd applic.)	Nov. 23, 1949	Dismissed after preliminary inquiry, Jan. 13, 1950
12.	Woven fabrics in the piece	Jan. 5, 1950	As above, Sept. 21, 1950
13.	Women's fur felt hats and hat bodies	Jan. 24, 1950	Changes recommended, Sept. 25, 1950; adopted by President Oct. 30, 1950
14.	Stencil silk, dyed or colored	Jan. 30, 1950	Dismissed after preliminary inquiry, June 7, 1951
15.	Fresh and frozen beef and veal	March 16, 1950	As above, June 30, 1950
16.	Aluminum and alloys in crude form and in coils, plates, etc.	March 24, 1950	As above, Nov. 21, 1950
17.	Same (different applicant)	April 7, 1950	As above, Nov. 21, 1950

	Commodity	Date of Application	Disposition
18.	Lead-bearing materials, lead and lead scrap	May 11, 1950	As above, Jan. 25, 1951
19.	Same (different applicant)	May 16, 1950	As above, Jan. 25, 1951
20.	Prepared hatters' fur	June 22, 1950	Changes recommended, Nov. 9, 1951; adopted by President Jan. 5, 1952
21.	Jeweled watches and watch movements	Feb. 13, 1951	Changes recommended June 14, 1952; rejected by President, Aug. 14, 1952
22.	Motorcycles and parts	May 21, 1951	Full investigation, no changes recommended June 16, 1952
23.	Blue-mold cheese	June 11, 1951	As above, June 12, 1952
24.	Wood screws	Aug. 15, 1951	Dismissed after preliminary inquiry, December 1951
25.	Spring clothespins (2nd investigation)	Aug. 22, 1951	Full investigation, no changes recommended Aug. 21, 1952
26.	Fresh or frozen groundfish fillets (1st investigation)	Sept. 10, 1951	As above, Sept. 4, 1952
27.	Garlic	Oct. 8, 1951	Changes recommended June 6, 1952; rejected by President July 21, 1952
28.	Bicycles and parts	Oct. 11, 1951	Full investigation, no changes recommended, Oct. 9, 1952
29.	Glace cherries	Oct. 26, 1951	As above, Oct. 17, 1952
30.	Canned Bonito and Tuna	Nov. 28, 1951	As above, Nov. 26, 1952
31.	Tobacco pipes and pipe bowls	Dec. 29, 1951	No formal report; President has requested further investigation

	Commodity	Date of Application	Disposition
32.	Household china	Feb. 11, 1952	Full investigation, no changes recommended February 1953
33.	Dried figs	March 17, 1952	Changes recommended July 24, 1952; accepted by President Aug. 16, 1952
34.	Wood Screws (2nd investigation)	April 1, 1952	Full investigation, no changes recommended, March 1953
35.	Mares' urine	April 8, 1952	Dismissed after preliminary hearing
36.	Chalk whiting	April 10, 1952	Full investigation, no changes recommended, April 1953
37.	Screen printed silk scarves	April 14, 1952	Changes recommended April 13, 1953; rejected by President June 10, 1953
38.	Wood wind instruments	April 29, 1952	Full investigation, no changes recommended April 1953
39.	Hard fiber cords and twines	July 7, 1952	Withdrawn, Jan. 14, 1953
40.	Cotton carding machinery	Aug. 12, 1952	Full investigation, no changes recommended, July 1953
41.	Rosaries	Sept. 15, 1952	As above, Aug. 1953
42.	Watch bracelets	Sept. 24, 1952	As above, Aug. 1953
43.	Handblown glassware	Sept. 25, 1952	Pending
44.	Mustard seeds	Feb. 9, 1953	Pending
45.	Manicure scissors, shears and blades	March 19, 1953	Pending

	Commodity	Date of Application	Disposition
46.	Groundfish fillets (2nd investigation)	May 27, 1953	Pending
47.	Watch movements and parts (2nd investigation)	Sept. 1, 1953	Pending
48.	Lead and zinc	Sept. 14, 1953	Pending
49.	Straight pins (dressmakers and common)	Sept. 23, 1953	Pending
50.	Safety pins	Sept. 28, 1953	Pending
51.	Fluospar, acid grade	Oct. 20, 1953	Pending

APPENDIX 43

TARIFF COMMISSION REGULATIONS - SECTION 3 OF THE TRADE AGREEMENTS EXTENSION ACT OF 1951

Subject Matter of Appendix: Regulations of the Tariff Commission establishing its rules of practice and procedure for investigations under the "peril point" provisions (Sec. 3) of the Trade Agreements Extension Act of 1951 (19 C.F.R. 206):

"Part 206 - Investigations Regarding Products on Which Possible Tariff Concessions Will Be Considered in Trade-Agreement Negotiations

Sec.
206.1 Applicability of rules under section 3, Trade Agreements Extension Act of 1951.
206.2 Purpose of investigation.
206.3 Public notice of investigation.
206.4 Public hearings.
206.5 Briefs.
206.6 Reports.

AUTHORITY: §§ 206.1 to 206.6 issued under sec. 3, Pub. Law 50, 82d Cong.

SOURCE: §§ 206.1 to 206.6 appear at 16 F.R. 10626, Oct. 18, 1951.

§ 206.1 Applicability of rules under section 3, Trade Agreements Extension Act of 1951. The rules under this part are specifically applicable to investigations for the purposes of section 3 of the Trade Agreements Extension Act of 1951 and apply in addition to the pertinent rules of general application set forth in Part 201 of this chapter.

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§ 206.2 Purpose of investigation. The purpose of an investigation under section 3 of the Trade Agreements Extension Act of 1951 is to determine, with respect to each import article included in a list of products submitted to the Commission by the President which are to be considered in trade-agreement negotiations for possible modification of duties and other import restrictions, imposition of additional import restrictions, or continuance of existing customs or excise treatment, (a) the limit to which such modification, imposition, or continuance may be extended in order to carry out the purpose of the Trade Agreements Act of 1934, as amended, without causing or threatening serious injury to the domestic industry producing like or directly competitive articles, and (b) the minimum increases in duties or additional import restrictions required in cases where increases in duties or additional import restrictions are required to avoid serious injury to the domestic industry producing like or directly competitive articles.

§ 206.3 Public notice of investigation. Public notice of an investigation for the purpose of section 3 of the Trade Agreements Extension Act of 1951 will be given in the manner prescribed in § 201.10 of this chapter. Copies of the notice and of the list of products to be covered by the investigation will be mailed on request to parties interested.

§ 206.4 Public hearings - (a) Public notice. In the course of an investigation pursuant to section 3 of the Trade Agreements Extension Act of 1951, the Commission will hold public hearings. Notice will be given of the time and place set for such hearings in the manner prescribed in § 201.10 of this chapter.

(b) Appearances at hearings. Parties interested may appear at public hearings, either in person or by representative, and produce, under oath, oral or written evidence relevant and material to the subject matter of the investigation.

(c) Written statements. Since public hearings are only a part of the investigation, and the Commission's findings are based on the information obtained at public hearings as well as other information which it may obtain in the course of the investigation, persons who cannot appear at public hearings but who desire to supply written information relevant and material to the subject matter of the investigation may do so by submitting fifteen clear copies of the written statement,

typed, printed, or duplicated, one of which shall be sworn to. No special form for presentation of written views is prescribed. Written statements so submitted will be given the same consideration as testimony presented at the hearing, and, except for confidential material, will be open to public inspection. Because the Commission's report to the President must be completed within 120 days after the receipt of the list of products from the President, written statements not submitted at the hearing can be assured consideration only if received by the Commission before the close of the public hearing.

(d) Official notice of Government publications. Publications of the United States Government, especially reports of the Tariff Commission, need not be offered in evidence because the Commission will take notice of them as public documents. Extensive excerpts from such publications, particularly data regarding United States production, exports, or imports, should not be included in statements to the Commission either at the hearing or otherwise, but should be referred to by citing the title and page number of the pertinent publication.

CROSS REFERENCES: For rule regarding conduct of public hearings, see § 201.14 of this chapter. For rule regarding official notice by Commission of public documents, see § 201.14 of this chapter.

(e) Confidential information. All information submitted in confidence should be submitted on separate pages clearly marked 'Confidential'. The Commission may refuse to accept in confidence any particular information which it determines is not entitled to confidential treatment.

CROSS REFERENCE: For general rule regarding confidential information, see § 201.6 of this chapter.

(f) Type of information to be developed at hearing or in written statements. Without excluding other pertinent information, but with a view to assisting parties interested to present information useful in formulating findings required by the statute, testimony at hearings and written statements should give emphasis to the following matters:

(1) Trends of domestic production, sales, and imports in respect of the articles in question, including data on recent developments.

(2) The competitive strength of the foreign article and the like or directly competitive domestic article in the markets of the United States during a period which is representative of conditions of competition between such articles.

(3) Geographic areas of greatest competition between the domestic and the imported product and the principal market or markets for these products in the United States.

(4) Costs of production and delivery of the foreign and the domestic article during the period specified under subparagraph (2) of this paragraph.

(5) Additional information of a factual character bearing on the position of the domestic industry in competition with the imported article.

§ 206.5 Briefs. Briefs of the evidence produced at the hearing and arguments thereon may be presented to the Commission by parties interested who have entered an appearance. Unless otherwise ordered, fifteen clear copies, typed, printed, or duplicated, shall be filed with the Secretary of the Commission within ten days after the close of the hearing.

§ 206.6 Reports. The Commission will report to the President its findings in the investigation not later than 120 days after the receipt by the Commission from the President of the list of products to be covered by the investigation.

Section 4 of the Trade Agreements Extension Act of 1951 provides that, within thirty days after a trade agreement has been entered into which does not comply with the limits or minimum requirements specified in the findings reported to the President by the Tariff Commission, the President shall transmit a copy of such agreement to the Congress, whereupon the Tariff Commission must deposit with the Committee on Ways and Means of the House of Representatives and the Committee on Finance of the Senate a copy of the portions of its report to the President dealing with the articles with respect to which such limits or minimum requirements are not complied with."

APPENDIX 44

MILLER ACT OF 1935

Subject Matter of Appendix: The Miller Act of 1935 (40 USC 270 a-e) which requires contractors, prior to award on government construction contracts to post performance and payment bonds, the latter for the protection of labor, suppliers and materialmen authorizing such persons who have not been paid to sue on the bond (40 USC quoted):

"§ 270a. Bonds of contractors for public buildings or works; waiver of bonds covering contract performed in foreign country

(a) Before any contract, exceeding $2,000 in amount, for the construction, alteration, or repair of any public building or public work of the United States is awarded to any person, such person shall furnish to the United States the following bonds, which shall become binding upon the award of the contract to such person, who is hereinafter designated as 'contractor':

(1) A performance bond with a surety or sureties satisfactory to the officer awarding such contract, and in such amount as he shall deem adequate, for the protection of the United States.

(2) A payment bond with a surety or sureties satisfactory to such officer for the protection of all persons supplying labor and material in the prosecution of the work provided for in said contract for the use of each such person. Whenever the total amount payable by the terms of the contract shall be not more than $1,000,000 the said payment bond shall be in a sum of one-half the total amount payable by the terms of the contract. Whenever the total amount payable by the terms of the contract

shall be more than $1,000,000 and not more than $5,000,000, the said payment bond shall be in a sum of 40 per centum of the total amount payable by the terms of the contract. Whenever the total amount payable by the terms of the contract shall be more than $5,000,000 the said payment bond shall be in the sum of $2,500,000.

(b) The contracting officer in respect of any contract is authorized to waive the requirement of a performance bond and payment bond for so much of the work under such contract as is to be performed in a foreign country if he finds that it is impracticable for the contractor to furnish such bonds.

(c) Nothing in this section shall be construed to limit the authority of any contracting officer to require a performance bond or other security in addition to those, or in cases other than the cases specified in subsection (a) of this section. Aug. 24, 1935, c. 642, Sec. 1, 49 Stat. 793."

" § 270b. Same; rights of persons furnishing labor or material

(a) Every person who has furnished labor or material in the prosecution of the work provided for in such contract, in respect of which a payment bond is furnished under section 270a of this title and who has not been paid in full therefor before the expiration of a period of ninety days after the day on which the last of the labor was done or performed by him or material was furnished or supplied by him for which such claim is made, shall have the right to sue on such payment bond for the amount, or the balance thereof, unpaid at the time of institution of such suit and to prosecute said action to final execution and judgment for the sum or sums justly due him: Provided, however, That any person having direct contractual relationship with a subcontractor but no contractual relationship express or implied with the contractor furnishing said payment bond shall have a right of action upon the said payment bond upon giving written notice to said contractor within ninety days from the date on which such person did or performed the last of the labor or furnished or supplied the last of the material for which such claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the

material was furnished or supplied or for whom the labor was done or performed. Such notice shall be served by mailing the same by registered mail, postage prepaid, in the envelop addressed to the contractor at any place he maintains an office or conducts his business, or his residence, or in any manner in which the United States marshal of the district in which the public improvement is situated is authorized by law to serve summons.

(b) Every suit instituted under this section shall be brought in the name of the United States for the use of the person suing, in the United States District Court for any district in which the contract was to be performed and executed and not elsewhere, irrespective of the amount in controversy in such suit, but no such suit shall be commenced after the expiration of one year after the date of final settlement of such contract. The United States shall not be liable for the payment of any costs or expenses of any such suit. Aug. 24, 1935, c. 642, Sec. 2, 49 Stat. 794."

"§ 270c. Same; right of person furnishing labor or material to copy of bond

The Comptroller General is authorized and directed to furnish, to any person making application therefor who submits an affidavit that he has supplied labor or materials for such work and payment therefor has not been made or that he is being sued on any such bond, a certified copy of such bond and the contract for which it was given, which copy shall be prima facie evidence of the contents, execution, and delivery of the original, and, in case final settlement of such contract has been made, a certified statement of the date of such settlement, which shall be conclusive as to such date upon the parties. Applicants shall pay for such certified copies and certified statements such fees as the Comptroller General fixes to cover the cost of preparation thereof. Aug. 24, 1935, c. 642, Sec. 3, 49 Stat. 794."

"§ 270d. Same; definition of 'person' in sections 270a, 270b and 270c

The term 'person' and the masculine pronoun as used in sections 270a-270c of this title shall include all persons whether individuals, associations, copartnerships, or corporations. Aug. 24, 1935, c. 642, Sec. 4, 49 Stat. 794."

"§ 270e. Same; waiver of sections 270a-270d with respect to Army or Navy contracts

Sections 270a-270d of this title may, in the discretion of the Secretary of the Army or the Secretary of the Navy, be waived with respect to contracts for the manufacturing, producing, furnishing, construction, alteration, repair, processing, or assembling of vessels, aircraft, munitions, materiel, or supplies of any kind or nature for the Army or the Navy, regardless of the terms of such contracts as to payment or title: Provided, That as to contracts of a nature which, on April 29, 1941, would have been subject to the provisions of sections 270a-270d of this title, the Secretary of the Army or the Secretary of the Navy may require performance and payment bonds as provided by said sections. Apr. 29, 1941, c. 81, 55 Stat. 147; July 26, 1947, c. 343, Title II, Sec. 205(a), 61 Stat. 501."

APPENDIX 45

COPELAND ACT OF 1948

Subject Matter of Appendix: The Copeland "Anti Kickback" Act (18 USC 874; 40 USC 276c) which makes it a crime for anyone to induce any person employed in construction of any public building or work to "kick back" any part of his compensation, and which authorizes the Secretary of Labor to make regulations for contractors and subcontractors for enforcement of the Act (18 USC and 40 USC quoted):

a) 18 USC 874:

"Sec. 874. Kickbacks from public works employees

Whoever, by force, intimidation, or threat of procuring dismissal from employment, or by any other manner whatsoever induces any person employed in the construction, prosecution, completion or repair of any public building, public work, or building or work financed in whole or in part by loans or grants from the United States, to give up any part of the compensation to which he is entitled under his contract of employment, shall be fined not more than $5,000 or imprisoned not more than five years, or both. June 25, 1948, c. 645, 62 Stat. 740."

b) 40 USC 276c:

"276c. Same; regulations governing contractors and subcontractors

The Secretary of Labor shall make reasonable regulations for contractors and subcontractors engaged in the construction, prosecution, completion or repair of public buildings, public works or

buildings financed in whole or in part by loans or grants from the United States, including a provision that each contractor and subcontractor shall furnish weekly a sworn affidavit with respect to the wages paid each employee during the preceding week. June 13, 1934, c. 482, Sec. 2, 48 Stat. 948; 1940 Reorg. Plan No. IV, Sec. 9, eff. June 30, 1940, 5 F.R. 2421, 54 Stat. 1236; May 24, 1949, c. 139, Sec. 134, 63 Stat. 108."

APPENDIX 46

WALSH-HEALY PUBLIC CONTRACTS ACT OF 1936

Subject Matter of Appendix: Pertinent provisions of the Walsh-Healy Public Contracts Act of 1936 as amended (41 USC 35-45) which requires the insertion in all contracts for supplies, materials or equipment in excess of $10,000 of stipulations and representations relative to minimum wages, maximum hours, child and convict labor, status of contractor, and working conditions (41 USC quoted):

"§ 35. Contracts for materials, etc., exceeding $10,000; representations and stipulations

In any contract made and entered into by any executive department, independent establishment, or other agency or instrumentality of the United States, or by the District of Columbia, or by any corporation all the stock of which is beneficially owned by the United States (all the foregoing being hereinafter designated as agencies of the United States), for the manufacture or furnishing of materials, supplies, articles, and equipment in any amount exceeding $10,000, there shall be included the following representations and stipulations:

(a) That the contractor is the manufacturer of or a regular dealer in the materials, supplies, articles, or equipment to be manufactured or used in the performance of the contract;

(b) That all persons employed by the contractor in the manufacture or furnishing of the materials, supplies, articles, or equipment used in the performance of the contract will be paid, without subsequent deduction or rebate on any account, not less than the minimum wages as determined by the Secretary of Labor to be

the prevailing minimum wages for persons employed on similar work or in the particular or similar industries or groups of industries currently operating in the locality in which the materials, supplies, articles, or equipment are to be manufactured or furnished under said contract;

(c) That no person employed by the contractor in the manufacture or furnishing of the materials, supplies, articles, or equipment used in the performance of the contract shall be permitted to work in excess of eight hours in any one day or in excess of forty hours in any one week: Provided, That the provisions of this subsection shall not apply to any employer who shall have entered into an agreement with his employees pursuant to the provisions of paragraphs 1 or 2 of subsection (b) of section 207 of Title 29;

(d) That no male person under sixteen years of age and no female person under eighteen years of age and no convict labor will be employed by the contractor in the manufacture or production or furnishing of any of the materials, supplies, articles, or equipment included in such contract; and

(e) That no part of such contract will be performed nor will any of the materials, supplies, articles, or equipment to be manufactured or furnished under said contract be manufactured or fabricated in any plants, factories, buildings, or surroundings or under working conditions which are unsanitary or hazardous or dangerous to the health and safety of employees engaged in the performance of said contract. Compliance with the safety, sanitary, and factory inspection laws of the State in which the work or part thereof is to be performed shall be prima-facie evidence of compliance with this subsection. June 30, 1936, c. 881, 49 Stat. 2036; May 13, 1942, c. 306, 56 Stat. 277."

"§ 36. Same; liability for breach; cancellation; completion by Government agency; employee's wages

Any breach or violation of any of the representations and stipulations in any contract for the purposes set forth in section 35 of this title shall render the party responsible therefor liable to the United States of America for liquidation damages, in addition to damages for any other breach of such contract, the sum of $10 per day for each male person under sixteen

years of age or each female person under eighteen years of age, or each convict laborer knowingly employed in the performance of such contract, and a sum equal to the amount of any deductions, rebates, refunds, or underpayment of wages due to any employee engaged in the performance of such contract; and, in addition, the agency of the United States entering into such contract shall have the right to cancel same and to make open-market purchases or enter into other contracts for the completion of the original contract, charging any additional cost to the original contractor. Any sums of money due to the United States of America by reason of any violation of any of the representations and stipulations of said contract set forth in section 35 of this title may be withheld from any amounts due on any such contracts or may be recovered in suits brought in the name of the United States of America by the Attorney General thereof. All sums withheld or recovered as deductions, rebates, refunds, or underpayments of wages shall be held in a special deposit account and shall be paid, on order of the Secretary of Labor, directly to the employees who have been paid less than minimum rates of pay as set forth in such contracts and on whose account such sums were withheld or recovered: Provided, That no claims by employees for such payment shall be entertained unless made within one year from the date of actual notice to the contractor of the withholding or recovery of such sums by the United States of America. June 30, 1936, c. 881, Sec. 2, 49 Stat. 2037."

"§ 37. Same; distribution of list of persons breaching contract; future contracts prohibited

The Comptroller General is authorized and directed to distribute a list to all agencies of the United States containing the names of persons or firms found by the Secretary of Labor to have breached any of the agreements or representations required by sections 35-45 of this title. Unless the Secretary of Labor otherwise recommends no contracts shall be awarded to such persons or firms or to any firm, corporation, partnership or association in which such persons or firms have a controlling interest until three years have elapsed from the date the Secretary of Labor determines such breach to have occurred. June 30, 1936, c. 881, Sec. 3, 49 Stat. 2037."

* * * * *

"§ 40. Same; exceptions; modification of contracts; variations; overtime; suspension of representations and stipulations

Upon a written finding by the head of the contracting agency or department that the inclusion in the proposal or contract of the representations or stipulations set forth in section 35 of this title will seriously impair the conduct of Government business, the Secretary of Labor shall make exceptions in specific cases or otherwise when justice or public interest will be served thereby. Upon the joint recommendation of the contracting agency and the contractor, the Secretary of Labor may modify the terms of an existing contract respecting minimum rates of pay and maximum hours of labor as he may find necessary and proper in the public interest or to prevent injustice and undue hardship. The Secretary of Labor may provide reasonable limitations and may make rules and regulations allowing reasonable variations, tolerances, and exemptions to and from any or all provisions of sections 35-45 of this title respecting minimum rates of pay and maximum hours of labor or the extent of the application of said sections to contractors, as hereinbefore described. Whenever the Secretary of Labor shall permit an increase in the maximum hours of labor stipulated in the contract, he shall set a rate of pay for any overtime, which rate shall be not less than one and one-half times the basic hourly rate received by any employee affected: Provided, That whenever in his judgment such course is in the public interest, the President is authorized to suspend any or all of the representations and stipulations contained in section 35 of this title. June 30, 1936, c. 881, Sec. 6, 49 Stat. 2038; June 28, 1940, c. 440, Title I, Sec. 13, 54 Stat. 681."

* * * * *

"§ 42. Same; effect of sections 35-45 on other laws

The provisions of sections 35-45 of this title shall not be construed to modify or amend Title III of the act entitled 'An Act making appropriations for the Treasury and Post Office Departments for the fiscal year ending June 30, 1934, and for other purposes', approved May 3, 1933 (commonly known as the Buy American Act), nor shall the provisions of sections 35-45 of this title be construed to modify or amend sections 276a to 276a-5 of Title 40, nor the labor provisions of Title II

of the National Industrial Recovery Act, approved April 8, 1935, as extended, or of section 7 of the Emergency Relief Appropriation Act, approved April 8, 1935; nor shall the provisions of sections 35-45 of this title be construed to modify or amend sections 744a-744n of Title 18. June 30, 1936, c. 881, Sec. 8, 49 Stat. 2039."

"§ 43. Same; sections 35-45 not applicable to certain contracts

Sections 35-45 of this title shall not apply to purchases of such materials, supplies, articles, or equipment as may usually be bought in the open market; nor shall they apply to perishables, including dairy, livestock and nursery products, or to agricultural or farm products processed for first sale by the original producers; nor to any contracts made by the Secretary of Agriculture for the purchase of agricultural commodities or the products thereof. Nothing said in sections of this title shall be construed to apply to carriage of freight or personnel by vessel, airplane, bus, truck, express, or railway line where published tariff rates are in effect or to common carries subject to the Communications Act of 1934. June 30, 1936, c. 881, Sec. 9, 49 Stat. 2039."

* * * * *

"§ 45. Same; effective date of sections 35-45 exception as to representations with respect to minimum wages

Sections 35-45 of this title shall apply to all contracts entered into pursuant to invitations for bids issued on or after ninety days from June 30, 1936: Provided, however, That the provisions requiring the inclusion of representations with respect to minimum wages shall apply only to purchases or contracts relating to such industries as have been the subject matter of a determination by the Secretary of Labor. June 30, 1936, c. 881, Sec. 11, 49 Stat. 2039."

APPENDIX 47

PUBLIC CONTRACTS DIVISION "RULING AND INTERPRETATION" RE WALSH-HEALY $10,000 LIMITATION

Subject Matter of Appendix: Section 3 of the Division of Public Contracts "Rulings and Interpretations" as amended through April, 1953 which sets forth the Division's interpretation of when contracts will and will not be deemed to exceed $10,000 in amount within the meaning of the Walsh-Healy Act:

"SEC. 3. AMOUNT INVOLVED

"(a) Indefinite amount - All contracts which may exceed $10,000 should include the stipulations required by the Act, unless the contracting officer knows in advance that the total amount of the contract will not exceed $10,000 in any event.

"(b) Reduction for prompt payment - If a contract is awarded for an amount in excess of $10,000 the stipulations required by the Act should be included, notwithstanding the fact that prompt payment may reduce the actual expenditure to a figure not exceeding $10,000. 'The total price named in the contract is the contract price insofar as the application of the said Act is concerned, any reduction therein being dependent upon a condition subsequent to the contract.' 16 Comp. Gen. 583; 16 Comp. Gen. 605.

"(c) Trade-in allowance - Trade-in allowances should not be deducted from the bid price in determining whether the contract is in excess of $10,000. The contract price rather than the means of payment is the controlling factor. 16 Comp. Gen. 605.

"(d) Installment delivery - Contracts which exceed or may exceed $10,000 come within the Act, irrespective of whether the material is delivered in installments or in one lot.

"(e) Contracts for separate items (1)--When an invitation is issued for bids on a variety of items totaling more than $10,000, subject to the Act, and bidders are permitted to bid on any one or more of the items amounting to not more than $10,000, awards made to different bidders for $10,000 or less are not subject to the Act.

"(2) If one contract is awarded containing several schedules for separate items and if the total price of the contract is in excess of $10,000, the contract is subject to the Act, even though each item is manufactured by a different concern, and the amount of each item is less than $10,000.

"(3) Where a single award is made in an amount exceeding $10,000 on a single invitation and for reasons of convenience several formal contracts are issued covering the award, each such contract is subject to the provisions of the Act, although each may happen to be for a sum less than $10,000.

"(f) Awards aggregating $10,000 or less on bids exceeding that amount - When a person bids on several items of equipment of an aggregate value in excess of $10,000 and is the low bidder on only a few items of an aggregate value not in excess of $10,000, his contract for those few items is not subject to the Act. 16 Comp. Gen. 744.

"(g) Inclusion of freight rates in price - The total contract price is the determining factor as to whether the Public Contracts Act applies to a Government contract for materials, supplies, articles or equipment. If a contract as awarded is for an amount in excess of $10,000 and requires the materials to be delivered by the contractor to the destination designated by the Government, the stipulations of the Act are required to be included in the contract even though the amount paid by the contractor for freight charges reduces to a figure below $10,000 the amount actually received by him for the goods."

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APPENDIX 48

PUBLIC CONTRACTS DIVISION "RULING AND INTERPRETATION" RE WALSH-HEALY AND DAVIS-BACON ACT APPLICATION

Subject Matter of Appendix: Excerpt from the Labor-Department's "Walsh-Healy Public Contracts Act, Rulings and Interpretations, October 1, 1945" as amended through April 1953, which shows the limitations on application of the Walsh-Healy Act to contracts involving construction, and the circumstances under which the Walsh-Healy Act and the Davis-Bacon Act may both apply to the same contract:

"SEC. 6. CONTRACTS INVOLVING CONSTRUCTION

(a) Contracts for the construction of public works including buildings and bridges (as to ships including United States naval vessels, see Sec. 7 below) are not subject to the Public Contracts Act and contractors performing such contracts may use in such construction materials, supplies, articles, or equipment manufactured or furnished by them without showing compliance with the Act.

(b) Contracts ordinarily awarded to manufacturers of or dealers in articles or equipment for the manufacture or furnishing of articles or equipment and which exceed or may exceed $10,000 are subject to the Public Contracts Act even though such contracts call for the erection or installation of the articles or equipment after delivery. If such a contract involves more than an incidental amount of erection or installation work it may also be subject to the Davis-Bacon Act with respect to such work if the site of such work is known at the time the invitation to bid is issued. Examples of such contracts are those for the manufacture or furnishing and installation of elevators or of generators requiring prepared foundations or housing."

APPENDIX 49

PUBLIC CONTRACTS DIVISION RULINGS, INTERPRETATIONS AND REGULATIONS RE TERRITORIAL APPLICATION OF WALSH-HEALY ACT

Subject Matter of Appendix: Department of Labor, Division of Public Contracts regulation (15 F.R. 6891, Oct. 13, 1950; 41 C.F.R. par. 201.603b) which makes the Walsh-Healy Act inapplicable to contracts to be performed outside the United States or its possessions; and the Labor Department's "Walsh-Healy Public Contracts Act, Rulings and Interpretations, October 1, 1945" as amended through April 1953, which restates the regulation and interprets it as authorizing application of the Act to those parts of contracts which are to be performed within the United States.

a) Regulation (15 F.R. 6891):

"§ 201.603 Administrative exemptions. The following classes of contracts have been exempted from the application of § 201.1 pursuant to the procedure required under section 6 of the act:

. . . . . .

(b) Contracts for materials, supplies, articles or equipment no part of which will be manufactured or furnished within the geographic limits of the continental United States, Alaska, Hawaii, Puerto Rico, the Virgin Islands, or the District of Columbia: Provided, That the representations and stipulations required by the act and these regulations in any contract for materials, supplies, articles, or equipment to be manufactured

or furnished in part within and in part outside such geographic limits shall not be applicable to any work performed under the contract outside such geographic limits.

The above amendment shall become effective as to all contracts subject to the Public Contracts Act, bids for which are solicited or negotiations otherwise commenced on or after November 1, 1950." [par. 8, 41 C.F.R. Supp.]

b) Rulings and Interpretations:

"SEC. 4. PLACE OF PERFORMANCE

(a) The Public Contracts Act does not apply to 'contracts for materials, supplies, articles, or equipment no part of which will be manufactured or furnished within the geographic limits of the continental States, Alaska, Hawaii, Puerto Rico, the Virgin Islands, or the District of Columbia ...' -- Regulations, Section 201.601(b), as amended October 13, 1950.

(b) Contracts to be performed in the United States, the District of Columbia, Alaska, Hawaii, Puerto Rico, and the Virgin Islands are subject to the provisions of the Public Contracts Act. Contracts to be performed outside the United States and the Territories mentioned are not subject to the provisions of the Act unless the performance of such contracts requires the shipment of the materials therefrom, in which event compliance with the Act and Regulations thereunder need be shown only as to operations within the United States and such Territories."

APPENDIX 50

ARMED SERVICES PROCUREMENT REGULATIONS RE WALSH-HEALY ACT

Subject Matter of Appendix: Joint regulations of the Army, Navy and Air Force (ASPR) which set forth their conception of the requirements and applicability of the Walsh-Healy Act and the form of clause to be included in contracts (ASPR, Section XII, Part 6, pars. 12-601 through 12-604)

"12-601 Statutory Requirement. In accordance with the requirement of the Walsh-Healy Public Contracts Act (Act of June 30, 1936, as amended; 41 U.S. Code 35-45), all contracts entered into by any Department for the manufacture or furnishing of supplies in any amount exceeding $10,000 shall incorporate by reference the representations and stipulations required by said Act pertaining to such matters as minimum wages, maximum hours, child labor, convict labor, safe and sanitary working conditions, and the contractor's status as a manufacturer or regular dealer.

12-602 Applicability. The requirement set forth in the preceding paragraph applies to contracts for the manufacture or furnishing of 'materials, supplies, articles, and equipment' which are to be performed within the geographic limits of the continental United States, Alaska, Hawaii, Puerto Rico, Virgin Islands, or the District of Columbia, and which exceed or may exceed $10,000 in amount. Pursuant to the Walsh-Healy Act, the Secretary of Labor has issued detailed regulations and interpretations as to the coverage of said Act, and exemptions and procedures thereunder. These regulations and interpretations are compiled in a document entitled 'Walsh-Healy Public Contracts Act, Rulings and Interpretations. In addition to the interpretations stated in that

document, attention is directed to an opinion of the Department of Labor that contracts which are originally $10,000 or less, but are subsequently modified to increase the price to an amount in excess of $10,000, are subject to the Walsh-Healy Act; and that contracts in an amount exceeding $10,000. which are subsequently modified to a figure of $10,000 or less, are not subject to said Act with respect to work performed after such modification if modification is effected by mutual agreement.

12-603 Responsibilities of Contracting Officers. Whenever the Walsh-Healy Public Contracts Act is applicable, the Contracting Officer shall, pursuant to regulations or instructions issued by the Secretary of Labor and in accordance with procedures prescribed by each respective Department -

(a) inform prospective contractors of the possible applicability of minimum wage determinations;

(b) furnish to the contractor a poster (Form PC-13);

(c) prepare and transmit Form PC-1 or substitute procedure approved by the Department of Labor and the Department concerned;

(d) report to the Department of Labor any violation of the representations or stipulations required by the Walsh-Healy Act.

12-604 Contract Clause. The contract clause required by this Part 6 of Section XII shall be as follows:

WALSH-HEALY PUBLIC CONTRACTS ACT

If this contract is for the manufacture or furnishing of materials, supplies, articles or equipment in an amount which exceeds or may exceed $10,000 and is otherwise subject to the

Walsh-Healy Public Contracts Act as amended (41 U.S. Code 35-45), there are hereby incorporated by reference all representations and stipulations required by said Act and regulations issued thereunder by the Secretary of Labor, such representations and stipulations being subject to all applicable rulings and interpretations of the Secretary of Labor which are now or may hereafter be in effect."

APPENDIX 51

EIGHT-HOUR LAW OF 1912

Subject Matter of Appendix: The Eight-Hour Law of 1912 as amended (40 U.S.C. 324, 325, 325a and 326) which requires that all government contracts (except contracts for commonly used supplies or supplies obtainable in the open market) contain a provision prohibiting the employment by the contractor or subcontractor of labor for more than eight hours in any one day unless overtime is compensated at 1-1/2 times the basic rate (40 U.S.C. quoted):

"Sec. 324 Public contracts to provide for eight-hour day; stipulation for penalty; inspectors to report violations; deduction of penalty; appeals; right of action in Court of Claims

Every contract made to which the United States, any Territory, or the District of Columbia is a party, and every such contract made for or on behalf of the United States, or any Territory, or said District, which may require or involve the employment of laborers or mechanics shall contain a provision that no laborer or mechanic doing any part of the work contemplated by the contract, in the employ of the contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work; and every such contract shall stipulate a penalty for each violation of such provision in such contract of $5 for each laborer or mechanic for every calendar day in which he shall be required or permitted to labor more than eight hours upon said work; and any officer or person designated as inspector of the work to be performed under any such contract, or to aid in

enforcing the fulfillment thereof, shall, upon observation or investigation, forthwith report to the proper officer of the United States, or of any Territory, or of the District of Columbia, all violations of the provisions of this section directed to be made in every such contract, together with the name of each laborer or mechanic who has been required or permitted to labor in violation of such stipulation and the day of such violation, and the amount of the penalties imposed according to the stipulation in any such contract shall be directed to be withheld for the use and benefit of the United States, the District of Columbia, or the Territory contracting by the officer or person whose duty it shall be to approve the payment of the moneys due under such contract, whether the violation of the provisions of such contract is by the contractor or any subcontractor. Any contractor or subcontractor aggrieved by the withholding of any penalty as hereinbefore provided shall have the right within six months thereafter to appeal to the head of the department making the contract on behalf of the United States or the Territory, and in the case of a contract made by the District of Columbia to the Commissioners thereof, who shall have power to review the action imposing the penalty, and in all such appeals from such final order whereby a contractor or subcontractor may be aggrieved by the imposition of the penalty hereinbefore provided, such contractor or subcontractor may, within six months after decision by such head of a department or the Commissioners of the District of Columbia, file a claim in the Court of Claims. June 19, 1912, c. 174, § 1, 37 Stat. 137; June 25, 1948, c. 646, § 19, 62 Stat. 989."

"§ 325. Same; contracts excepted; work included; waiver in time of war; when penalty not to be imposed; eight-hour law not affected

Nothing in section 324 of this title shall apply to contracts for transportation by land or water, or for the transmission of intelligence, or for the purchase of supplies by the Government, whether manufactured to conform to particular specifications or not, or for such materials or articles as may usually be bought in open market, except armor and armor plate, whether made to conform to particular specifications or not, or to the construction or repair of levees or revetments necessary for protection against floods or overflows on the navigable waters of the

United States: Provided, That all classes of work which have been, or may be performed by the Government shall, when done by contract, by individuals, firms, or corporations for or on behalf of the United States or any of the Territories or the District of Columbia, be performed in accordance with the terms and provisions of section 324 of this title. The President, by Executive Order may waive the provisions and stipulations in this section and section 324 of this title as to any specific contract or contracts during time of war or a time when war is imminent. No penalties shall be imposed for any violation of such provision in such contract due to any extraordinary events or conditions of manufacture, or to any emergency caused by fire, famine, or flood, by danger to life or to property, or by other extraordinary event or condition on account of which the President shall subsequently declare the violation to have been excusable. Nothing in this section or section 324 of this title shall be construed to repeal or modify sections 321-323 of this title, or apply to contracts entered into under the provisions of appropriation Acts approved prior to June 19, 1912. June 19, 1912, c. 174, § 2, 37 Stat. 138." (p. 478)

"§ 325a. Same; computation of wages on basic day rate of eight hours; work in excess of day rate

Notwithstanding any other provision of law, the wages of every laborer and mechanic employed by any contractor or subcontractor engaged in the performance of any contract of the character specified in sections 324 and 325 of this title, shall be computed on a basic day rate of eight hours per day and work in excess of eight hours per day shall be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. Sept. 9, 1940, 9 a.m., E.S.T., c. 717, Title III, § 303, 54 Stat. 884." (p. 479)

"§ 326. Suspension of eight-hour law in case of emergency; overtime pay

In case of national emergency the President is authorized to suspend provisions of law prohibiting more than eight hours labor in any one day of persons engaged upon work covered by contracts with the United States: Provided, That the wages of persons

employed upon such contracts shall be computed on a basic day rate of eight hours work, with overtime rates to be paid for at not less than time and one-half for all hours work in excess of eight hours. Mar. 4, 1917, c. 180, 39 Stat. 1192." (p. 481)

APPENDIX 52

ARMED SERVICES PROCUREMENT REGULATIONS RE EIGHT HOUR LAW OF 1912

Subject Matter of Appendix: Those provisions of the Armed Services Procurement Regulations which set forth the joint policies and interpretations of the Army, Navy and Air Force relative to the application of the Eight Hour Law of 1912 to contracts other than construction contracts (ASPR, Section XII, Part 3, pars. 12:300 through 12:302 as amended October 7, 1953, 18 F.R. 6405, Oct. 8, 1953, 32 CFR 411.300 et seq.) (18 F.R. quoted):

"SUBPART C - EIGHT-HOUR LAW OF 1912
(OTHER THAN CONSTRUCTION CONTRACTS)

§ 411.300 Scope of subpart. This subpart deals with the requirements of the Eight-Hour Law of 1912, as amended (40 U.S.C. 324-326), applicable to contracts other than construction contracts as defined and covered in Subpart D of this part.

§ 411.301 Statutory requirement. In accordance with the requirement of the Eight-Hour Law of 1912, as amended (40 U.S.C. 324-326), certain contracts entered into by any Department shall contain a clause to the effect that no laborer or mechanic doing any part of the work contemplated by the contract shall be required or permitted to work more than eight hours in any one calendar day upon such work, unless such laborer or mechanic is compensated for all hours worked in excess of eight hours in any one calendar day at not less than one and one-half times the basic rate of pay.

§ 411.302. Applicability. The requirement set forth in 411.301 applies, except as stated in paragraphs (a) to (e) of this section, to all contracts

which may require or involve the employment of laborers or mechanics either by a contractor or by any subcontractor. The requirement does not apply to the following kinds of contracts:

(a) Contracts (or portions thereof) to be performed in a foreign country over which the United States has no direct legislative control, to the extent that such contracts (or portions thereof) may require or involve the employment of laborers or mechanics there;

(b) Contracts with a State or political subdivision thereof (although the requirement does apply, and the contract must so provide, to a subcontract thereunder with a private person or firm);

(c) Contracts (or portions thereof) for supplies in connection with which any required services are merely incidental to the sale and do not require substantial employment of laborers or mechanics;

(d) Contracts (or portions thereof) for materials or articles (other than armor or armor plate) usually bought in the open market (although the requirement does apply, and the contract must so provide, with respect to any contract involving the performance of any class of work which is ordinarily, and not merely occasionally or to a limited extent, performed by the Government);

(e) Contracts (or portions thereof) subject to the provisions of the Walsh-Healy Public Contracts Act (see Subpart F of this part)."

APPENDIX 53

ARMED SERVICES PROCUREMENT REGULATIONS RE DAVIS-BACON ACT, COPELAND ACT AND EIGHT HOUR LAW OF 1912

Subject Matter of Appendix: Provisions of the joint Army, Navy and Air Force regulations (A.S.P.R., Sec. XII, pars. 12-400 through 12-402 as amended and added October 7, 1953, 18 F.R. 6406, October 8, 1953) which show policy of the armed forces with respect to application of the Davis-Bacon Act, the Copeland Act and the Eight Hour Law (18 F.R. quoted):

"SUBPART D--LABOR STANDARDS IN CONSTRUCTION CONTRACTS

"§ 411.400 Scope of subpart. This subpart deals with labor standards for construction contracts as prescribed by the statutes and regulations set forth in 411.401.

"§ 411.401 Statutes and regulations--(a) Davis-Bacon Act. The Davis-Bacon Act (Act of March 3, 1931, as amended; 40 U.S.C. 276a) provides that certain contracts over $2,000 entered into by any Department for the construction, alteration, or repair (including painting and decorating) of public buildings or public works shall contain a provision (see § 411.403 et seq.) to the effect that no laborer or mechanic employed directly upon the site of the work contemplated by the contract shall receive less than the prevailing wages as determined by the Secretary of Labor.

"(b) Copeland Act. The Copeland ('Anti-Kickback') Act (18 U.S.C. 874 and 40 U.S.C 276c) makes it unlawful to induce, by force or otherwise, any person employed in the construction or repair of public buildings or public works (including those financed in whole or in part by

loans or grants from the United States) to give up any part of the compensation to which he is entitled under his contract of employment. In accordance with regulations of the Secretary of Labor issued pursuant to the Copeland Act, certain contracts entered into by any Department shall contain a provision (see § 411.403 et seq.) to the effect that the contractor and any subcontractor shall comply with the regulations of the Secretary of Labor under the act.

"(c) Eight-Hour Laws. See § 411.301. (However, with respect to construction contracts, the applicable statutes are 40 U.S.C. 321-326.)

"(d) Department of Labor Regulations. Pursuant to the foregoing statutes and Reorganization Plan No. 14 of 1950 (15 F.R. 3176), the Secretary of Labor has issued 29 CFR Part 3, Subtitle A (7 F.R. 686, as amended) and 29 CFR Part 5, Subtitle A (16 F.R. 4430, as amended), providing for the administration and enforcement of these statutes in construction contracts. The requirements under the Davis-Bacon Act and the Copeland Act apply only to the continental United States and its territories of Alaska and Hawaii while the Eight-Hour Laws apply also to other areas over which the United States has direct legislative control.

"§ 411.402 Applicability. These requirements apply to construction contracts. The term 'construction contract' as used in this subpart means any contract providing for the actual construction, alteration or repair, including painting and decorating, of a public building or public work, or of a building or work financed in whole or in part from Federal funds. It generally includes construction activity as distinguished from manufacturing, furnishing of materials, or servicing or maintenance work. It does not apply to the following kinds of contracts:

"(a) Contracts for supplies (including installations or maintenance work which is only incidental to the furnishing of such supplies);

although the requirement does apply (1) where installation involves a substantial amount of construction at the site, such as for heavy generators and large refrigerators, (2) to the transportation of supplies to or from the site of the work by employees of the construction contractor or of a construction subcontractor, and (3) to the manufacturing or furnishing of supplies such as window frames and other millwork, on the site of the work by the contractor or sub-contractor on a construction, alteration, or repair contract otherwise subject to the act, or to the manufacturing or furnishing of supplies under a contract based upon the specifications, and at the site of the work, of a construction, alteration, or repair contract otherwise subject to the act;

"(b) Contracts for servicing or maintenance work (including installation or movement of machinery or other equipment, and incidental plant rearrangement) which involve only an incidental amount of construction, alteration, or repair; although the requirement does apply (1) to installation, movement, or rearrangement of machinery or other equipment involving a substantial amount of construction or repair, and (2) to servicing or maintenance work based upon the specifications of a construction contract otherwise subject to the act and which is performed at the site of the construction work involved;

"(c) Contracts for the construction or repair of vessels, aircraft, or other kinds of personal property;

"(d) Contracts to be performed at a place not known or not reasonably ascertainable at the time the contract is entered into."

APPENDIX 54

PUBLIC CONTRACTS DIVISION RULES AND REGULATIONS RE PRECEDENCE OF WALSH-HEALY ACT

Subject Matter of Appendix: Section 21 of Department of Labor, Public Contracts Division, Rulings and Interpretations under the Walsh-Healy Act, as amended through April 1953, which set forth the effect of Fair Labor Standards Act and Eight Hour Law provisions on the Walsh-Healy Act and which state that where the Eight Hour Law and the Walsh-Healy Act overlap, the latter takes precedence:

"Section 21. Other Statutes and Agreements As To Wages and Hours

(a) The fact that the Fair Labor Standards Act of 1938, as amended (52 Stat. 1060, 29 U.S.C. 201) or any State legislation permits a greater number of working hours without payment of overtime does not affect the obligation of an employer under the Act.

(b) Except as provided in section 1(c) of the Act (see sec. 42 (g) of this pamphlet), private agreements respecting hours of work, wage rates, and overtime cannot relieve an employer of his obligation under the Act; e.g., a union contract between any employer and his employees providing for time and one-third overtime does not excuse the payment of time and one-half.

(c) Where the field of application of the Public Contracts Act and the so-called Eight-Hour Law (37 Stat. 137, 40 U.S.C. 324-325) overlap and the provisions of the Public Contracts Act are clearly applicable to complete performance of the contract, the provisions of the Eight-Hour Law should not be included in the contract (19 Comp. Gen. 267). Wherever the two Acts overlap, the provisions of the Public Contracts Act take precedence over those of the Eight-Hour Law.

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(d) In this connection, it should be noted that section 303 of the Act of September 9, 1940 (54 Stat. 884, 40 U.S.C. 325 (a)), does not affect the daily overtime requirements of the Public Contracts Act. The cited provision has reference to the Eight-Hour Law and merely provides that laborers and mechanics of contractors and subcontractors engaged on public work may be employed for more than 8 hours a day, provided time and one-half the basic rate of pay is paid for all hours in excess of eight a day.

APPENDIX 55

DAVIS-BACON ACT OF 1931

Subject Matter of Appendix: The Davis-Bacon Act of 1931 as amended (40 USC 276a through a7), which requires inclusion in all government construction contracts in excess of $2,000 of stipulations for the payment, to labor employed at the site of the work, of minimum weekly wages determined by the Secretary of Labor to be the prevailing wage for like work in the locality involved (40 USC quoted):

"§ 276a. Rate of wages for laborers and mechanics

The advertised specifications for every contract in excess of $2,000, to which the United States or the District of Columbia is a party, for construction, alteration, and/or repair, including painting and decorating, of public buildings or public works of the United States or the District of Columbia within the geographical limits of the States of the union, the Territory of Alaska, the Territory of Hawaii, or the District of Columbia, and which requires or involves the employment of mechanics and/or laborers shall contain a provision stating the minimum wages to be paid various classes of laborers and mechanics which shall be based upon the wages that will be determined by the Secretary of Labor to be prevailing for the corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work in the city, town, village, or other civil subdivision of the State, or the Territory of Alaska, or the Territory of Hawaii in which the work is to be performed, or in the District of Columbia if the work is to be performed there; and every contract based upon these specifications shall contain a stipulation that the contractor or his subcontractor shall pay all mechanics and laborers employed directly upon the site of the work,

unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the advertised specifications, regardless of any contractual relationship which may be alleged to exist between the contractor or subcontractor and such laborers and mechanics, and that the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work; and the further stipulation that there may be withheld from the contractor so much of accrued payments as may be considered necessary by the contracting officer to pay to laborers and mechanics employed by the contractor or any subcontractor on the work the difference between the rates of wages required by the contract to be paid laborers and mechanics on the work and the rates of wages received by such laborers and mechanics and not refunded to the contractor, subcontractors, or their agents. March 3, 1931, c. 411, Sec. 1, 46 Stat. 1494; Aug. 30, 1935, c. 825, 49 Stat. 1011; June 15, 1940, c. 373, Sec. 1, 54 Stat. 399."

" §276a-1. Termination of work on failure to pay agreed wages; completion of work by Government

Every contract within the scope of sections 276a to 276a-5 of this title shall contain the further provision that in the event it is found by the contracting officer that any laborer or mechanic employed by the contractor or any subcontractor directly on the site of the work covered by the contract has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid as aforesaid, the Government may, by written notice to the contractor, terminate his right to proceed with the work or such part of the work as to which there has been a failure to pay said required wages and to prosecute the work to completion by contract or otherwise, and the contractor and his sureties shall be liable to the Government for any excess costs occasioned the Government thereby. March 3, 1931, c. 411, Sec. 2, as added Aug. 30, 1935, c. 825, 49 Stat. 1011."

"§ 276a-2. Payment of wages by Comptroller General from withheld payments; listing contractors violating contracts

(a) The Comptroller General of the United States is authorized and directed to pay directly to laborers and mechanics from any accrued payments withheld under the terms of the contract any wages found to be due laborers and mechanics pursuant to sections 276a to 276a-5 of this title; and the Comptroller General of the United States is further authorized and is directed to distribute a list to all departments of the Government giving the names of persons or firms whom he has found to have disregarded their obligations to employees and subcontractors. No contract shall be awarded to the persons or firms appearing on this list or to any firm, corporation, partnership, or association in which such persons or firms have an interest until three years have elapsed from the date of publication of the list containing the names of such persons or firms.

(b) If the accrued payments withheld under the terms of the contract, as aforesaid, are insufficient to reimburse all the laborers and mechanics, with respect to whom there has been a failure to pay the wages required pursuant to sections 276a to 276a-5 of this title, such laborers and mechanics shall have the right of action and/or of intervention against the contractor and his sureties conferred by law upon persons furnishing labor or materials, and in such proceedings it shall be no defense that such laborers and mechanics accepted or agreed to accept less than the required rate of wages or voluntarily made refunds. March 3, 1931, c. 411, Sec. 3, as added Aug. 30, 1935, c. 825, 49 Stat. 1011."

"§ 276a-3. Effect on other Federal laws

Sections 276a to 276a-5 of this title shall not be construed to supersede or impair any authority otherwise granted by Federal law to provide for the establishment of specific wage rates. March 3, 1931, c. 411, Sec. 4, as added Aug. 30, 1935, c. 825, 49 Stat. 1011."

"§ 276a-4. Effective date of sections 276a to 276a-5

Sections 276a to 276a-5 of this title shall take effect thirty days after August 30, 1935, but shall not affect any contract then existing or any contract that may thereafter be entered into pursuant to invitations for bids that are outstanding on August 30, 1935. March 3, 1931, c. 411, Sec. 5, as added Aug. 30, 1935, c. 825, 49 Stat. 1011."

"§ 276a-5. Suspension of sections 276a to 276a-5 during emergency

In the event of a national emergency the President is authorized to suspend the provisions of sections 276a to 276a-5 of this title. March 3, 1931, c. 411, Sec. 6, as added Aug. 30, 1935, c. 825, 49 Stat. 1011."

. . . . .

"§ 276a-7. Application of sections 276a to 276a-5 to contracts entered into without regard to section 5 of Title 41

The fact that any contract authorized by any Act is entered into without regard to section 5 of Title 41, or upon a cost-plus-a-fixed-fee basis or otherwise without advertising for proposals, shall not be construed to render inapplicable the provisions of sections 276a to 276a-5 of this title, if such Act would otherwise be applicable to such contract. March 23, 1941, 12 noon, c. 26, 55 Stat. 53; Aug. 21, 1941, c. 395, 55 Stat. 658."

APPENDIX 56

CRIMINAL STATUTE RE EMPLOYMENT OF CONVICT LABOR

Subject Matter of Appendix: Statute making it a crime for any government officer or employee to contract with anyone or permit any penal official to hire out labor of prisoners confined for violation of federal laws (18 USC 436) and government contracts:

> "Sec. 436: Convict Labor Contracts[x]
>
> Whoever, being an officer, employee or agent of the United States or any department or agency thereof, contracts with any person or corporation, or permits any warden, agent, or official of any penal or correctional institution, to hire out the labor of any prisoners confined for violation of any laws of the United States, shall be fined not more than $1,000 or imprisoned not more than three years, or both. June 25, 1948, c. 645, 62 Stat. 703."

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x Derives from February 23, 1887, c. 213, Secs. 1, 2, 24 Stat. 411.

APPENDIX 57

FAIR LABOR STANDARDS ACT OF 1938

Subject Matter of Appendix: Pertinent portions of the Fair Labor Standards Act of 1938 (29 U.S.C. 201-219) which applies generally within the United States and requires the observance of prescribed standards with respect to minimum wages, maximum hours, overtime and child labor (29 U.S.C. quoted).

"§ 202. Congressional finding and declaration of policy

(a) The Congress finds that the existence, in industries engaged in commerce or in the production of goods for commerce, of labor conditions detrimental to the maintenance of the minimum standard of living necessary for health, efficiency, and general well-being of workers (1) causes commerce and the channels and instrumentalities of commerce to be used to spread and perpetuate such labor conditions among the workers of the several States; (2) burdens commerce and the free flow of goods in commerce; (3) constitutes an unfair method of competition in commerce; (4) leads to labor disputes burdening and obstructing commerce and the free flow of goods in commerce; and (5) interferes with the orderly and fair marketing of goods in commerce."

"(b) It is declared to be the policy of this chapter through the exercise by Congress of its power to regulate commerce among the several States and with foreign nations, to correct and as rapidly as practicable to eliminate the conditions above referred to in such industries without substantially curtailing employment or earning power. June 25, 1938, c. 676, Sec. 2, 52 Stat. 1060 as amended Oct. 26, 1949, c. 736, Sec. 2, 63 Stat. 910."

"§ 203. Definitions

As used in Sections 201-219 of this title--

(a) 'Person' means an individual, partnership, association, corporation, business trust, legal representative, or any organized group of persons.

(b) 'Commerce' means trade, commerce, transportation, transmission, or communication among the several States or between any State and any place outside thereof.

* * * * *

(d) 'Employer' includes any person acting directly or indirectly in the interest of an employer in relation to any employee but shall not include the United States or any State or political subdivision of a State, or any labor organization (other than when acting as an employer), or anyone acting in the capacity of officer or agent of such labor organization.

(e) 'Employee' includes any individual employed by an employer."

* * * * *

"(j) 'Produced' means produced, manufactured, mined, handled, or in any other manner worked on in any State; and for the purposes of this chapter an employee shall be deemed to have been engaged in the production of goods if such employee was employed in producing, manufacturing, mining, handling, transporting, or in any other manner working on such goods, or in any closely related process or occupation directly essential to the production thereof, in any State.

* * * * *

"(l) 'Oppressive Child labor' means a condition of employment under which (1) any employee under the age of sixteen years is employed by an employer (other than a parent or a person standing in place of a parent employing his own child or a child in his custody under the age of sixteen years in an occupation other than manufacturing or mining or an occupation found by the Secretary of Labor to be particularly hazardous for the employment of children between the ages of sixteen and eighteen years or detrimental to

their health or well-being) in any occupation, or (2) any employee between the ages of sixteen and eighteen years is employed by an employer in any occupation which the Secretary of Labor shall find and by order declare to be particularly hazardous for the employment of children between such ages or detrimental to their health or well-being; but oppressive child labor shall not be deemed to exist by virtue of the employment in any occupation of any person with respect to whom the employer shall have on file an unexpired certificate issued and held pursuant to regulations of the Secretary of Labor certifying that such person is above the oppressive child-labor age. The Secretary of Labor shall provide by regulation or by order that the employment of employees between the ages of fourteen and sixteen years in occupations other than manufacturing and mining shall not be deemed to constitute oppressive child labor if and to the extent that the Secretary of Labor determines that such employment is confined to periods which will not interfere with their schooling and to conditions which will not interfere with their health and well-being. (9p. 5 pocket supp.)

(m) 'Wage' paid to any employee includes the reasonable cost, as determined by the Administrator, to the employer of furnishing such employee with board, lodging, or other facilities, if such board, lodging, or other facilities are customarily furnished by such employer to his employees. June 25, 1938, c. 676, Sec. 3, 52 Stat. 1060; 1946 Reorg. Plan No. 2, Sec. 1, eff. July 16, 1946, 11 F.R. 7873, 60 Stat. 1095; as amended Oct. 26, 1949, c. 736, Sec. 3, 63 Stat. 911."

* * * * *

"§ 206. Minimum Wages; effective date

(a) Every employer shall pay to each of his employees who is engaged in commerce or in the production of goods for commerce wages at the following rates--

(1) not less than 75 cents an hour; ... June 25, 1938, c. 676, Sec. 6, 52 Stat. 1062; June 26, 1940, c. 432, Sec. 3(e), (f) 54 Stat. 616; Oct. 26, 1949, c. 736, Sec. 6, 63 Stat. 912."

* * * * *

"§ 207. Maximum hours

(a) Except as otherwise provided in this section, no employer shall employ any of his employees who is engaged in commerce or in the production of goods for commerce for a workweek longer than forty hours, unless such employee receives compensation for his employment in excess of the hours above specified at a rate of not less than one and one-half times the regular rate at which he is employed.

(b) No employer shall be deemed to have violated subsection (a) of this section by employing any employee for a workweek in excess of that specified in such subsection without paying the compensation for overtime employment prescribed therein if such employee is so employed--

(1) in pursuance of an agreement, made as a result of collective bargaining by representatives of employees certified as bona fide by the National Labor Relations Board, which provides that no employee shall be employed more than one thousand and forty hours during any period of twenty-six consecutive weeks; or

(2) in pursuance of an agreement, made as a result of collective bargaining by representatives of employees certified as bona fide by the National Labor Relations Board, which provides that during a specified period of fifty-two consecutive weeks the employee shall be employed not more than two thousand two hundred and forty hours and shall be guaranteed not less than one thousand eight hundred and forty hours (or not less than forty-six weeks at the normal number of hours worked per week, but not less than thirty hours per week) and not more than two thousand and eighty hours of employment for which he shall receive compensation for all hours guaranteed or worked at rates not less than those applicable under the agreement to the work performed and for all hours in excess of the guaranty which are also in excess of forty hours in the workweek or two thousand and eighty in such period at rates not less than one and one-half times the regular rate at which he is employed; or

(3) for a period or periods of not more than fourteen workweeks in the aggregate in any calendar year in an industry found by the Administrator to be of a seasonal nature, and if such employee receives

compensation for employment in excess of twelve hours in any workday, or for employment in excess of fifty-six hours in any workweek, as the case may be, at a rate not less than one and one-half times the regular rate at which he is employed.

. . . . . .

(d) As used in this section the 'regular rate' at which an employee is employed shall be deemed to include all remuneration for employment paid to, or on behalf of, the employee, but shall not be deemed to include--

(1) sums paid as gifts; payments in the nature of gifts made at Christmas time or on other special occasions, as a reward for service, the amounts of which are not measured by or dependent on hours worked, production, or efficiency;

(2) payments made for occasional periods when no work is performed due to vacation, holidy, illness, failure of the employer to provide sufficient work, or other similar cause; reasonable payments for traveling expenses, or other expenses, incurred by an employee in the furtherance of his employer's interests and properly reimbursable by the employer; and other similar payments to an employee which are not made as compensation for his hours of employment;

(3) sums paid in recognition of services performed during a given period if either, (a) both the fact that payment is to be made and the amount of the payments are determined at the sole discretion of the employer at or near the end of the period and not pursuant to any prior contract, agreement, or promise causing the employee to expect such payments regularly; or (b) the payments are made pursuant to a bona fide profit-sharing plan or trust or bona fide thrift or savings plan, meeting the requirements of the Administrator set forth in appropriate regulations which he shall issue, having due regard among other relevant factors, to the extent to which the amounts paid to the employee are determined without regard to hours of work, production, or efficiency; or (c) the payments are talent fees (as such talent fees are defined and delimited by regulations of the Administrator) paid to performers, including announcers, on radio and television programs;

(4) contributions irrevocably made by an employer to a trustee or third person pursuant to a bona fide plan for providing old-age, retirement, life, accident, or health insurance or similar benefits for employees;

(5) extra compensation provided by a premium rate paid for certain hours worked by the employee in any day or workweek because such hours are hours worked in excess of eight in a day or forty in a workweek or in excess of the employee's normal working hours or regular working hours, as the case may be;

(6) extra compensation provided by a premium rate paid for work by the employee on Saturdays, Sundays, holidays, or regular days of rest, or on the sixth or seventh day of the workweek, where such premium rate is not less than one and one-half times the rate established in good faith for like work performed in nonovertime hours on other days; or

(7) extra compensation provided by a premium rate paid to the employee, in pursuance of an applicable employment contract or collective-bargaining agreement, for work outside of the hours established in good faith by the contract or agreement as the basic, normal, or regular workday (not exceeding eight hours) or workweek (not exceeding forty hours), where such premium rate is not less than one and one-half times the rate established in good faith by the contract or agreement for like work performed during such workday or workweek.

(e) No employer shall be deemed to have violated subsection (a) by employing any employee for a workweek in excess of forty hours if such employee is employed pursuant to a bona fide individual contract, or pursuant to an agreement made as a result of collective bargaining by representatives of employees, if the duties of such employee necessitate irregular hours of work, and the contract or agreement (1) specifies a regular rate of pay not less than the minimum hourly rate provided in section 206 (a) of this title and compensation at not less than one and one-half times such rate for all hours worked in excess of forty in any workweek, and (2) provides a weekly guaranty of pay for not more than sixty hours based on the rates so specified.

(f) No employer shall be deemed to have violated subsection (a) by employing any employee for a workweek in excess of forty hours if, pursuant to an agreement

or understanding arrived at between the employer and the employee before performance of the work, the amount paid to the employee for the number of hours worked by him in such workweek in excess of forty hours--

(1) in the case of an employee employed at piece rates, is computed at piece rates not less than one and one-half times the bona fide piece rates applicable to the same work when performed during non-overtime hours; or

(2) in the case of an employee performing two or more kinds of work for which different hourly or piece rates have been established, is computed at rates not less than one and one-half times such bona fide rates applicable to the same work when performed during nonovertime hours; or

(3) is computed at a rate not less than one and one-half times the rate established by such agreement or understanding as the basic rate to be used in computing overtime compensation thereunder: Provided, That the rate so established shall be authorized by regulation by the Administrator as being substantially equivalent to the average hourly earnings of the employee, exclusive of overtime premiums, in the particular work over a representative period of time; and if (i) the employee's average hourly earnings for the workweek exclusive of payments described in paragraphs (1) through (7) of subsection (d) are not less than the minimum hourly rate required by applicable law, and (ii) extra overtime compensation is properly computed and paid on other forms of additional pay required to be included in computing the regular rate.

(g) Extra compensation paid as described in paragraphs (5)-(7) of subsection (d) shall be creditable toward overtime compensation payable pursuant to this section. June 25, 1938, c. 676, Sec. 7, 52 Stat. 1063; as amended Oct. 29, 1941; c. 461, 55 Stat. 756; July 20, 1949, c. 352, Sec. 1, 63 Stat. 446; Oct. 26, 1949, c. 736, Sec. 7, 63 Stat. 912.

Note: Secs. 209-211 relate to hearings, appeals, records, investigations and regulations and are not reproduced.

"§ 212. Child labor provisions

(a) No producer, manufacturer, or dealer shall ship or deliver for shipment in commerce any goods produced in an establishment situated in the United States in or about which within thirty days prior to the removal of such goods therefrom any oppressive child labor has been employed: Provided, That any such shipment or delivery for shipment of such goods by a purchaser who acquired them in good faith in reliance on written assurance from the producer, manufacturer, or dealer that the goods were produced in compliance with the requirements of this section, and who acquired such goods for value without notice of any such violation, shall not be deemed prohibited by this subsection: And provided further, That a prosecution and conviction of a defendant for the shipment or delivery for shipment of any goods under the conditions herein prohibited shall be a bar to any further prosecution against the same defendant for shipments or deliveries for shipment of any such goods before the beginning of said prosecution.

(b) The Secretary of Labor, or any of his authorized representatives, shall make all investigations and inspections under section 211 (a) of this title with respect to the employment of minors, and, subject to the direction and control of the Attorney General, shall bring all actions under section 217 of this title to enjoin any act or practice which is unlawful by reason of the existence of oppressive child labor, and shall administer all other provisions of sections 201-219 of this title relating to oppressive child labor.

(c) No employer shall employ any oppressive child labor in commerce or in the production of goods for commerce. June 25, 1938, c. 676, Sec. 12, 52 Stat. 1067; 1946 Reorg. Plan No. 2., Sec. 1, eff. July 16, 1946, 11 F.R. 7873, 60 Stat. 1095; as amended Oct. 26, 1949, c. 736, Sec. 10, 63 Stat. 917.

"§ 213. Exemptions

(a) The provisions of sections 206 and 207 of this title shall not apply with respect to (1) any employee employed in a bona fide executive, administrative, professional, or local retailing capacity, or in the capacity of outside salesman

(as such terms are defined and delimited by regulations of the Administrator); . . . June 25, 1938, c. 676, Sec. 13, 52 Stat. 1067; Aug. 9, 1939, c. 605, 53 Stat. 1266; as amended Oct. 26, 1949, c. 736, Sec. 11, 63 Stat. 917."

* * * * *

"§ 215. Prohibited acts; prima facie evidence

(a) After the expiration of one hundred and twenty days from the date of enactment of sections 201-219 of this title, it shall be unlawful for any person--

(1) to transport, offer for transportation, ship, deliver, or sell in commerce, or to ship, deliver, or sell with knowledge that shipment or delivery or sale thereof in commerce is intended, any goods in the production of which any employee was employed in violation of section 206 or section 207 of this title, or in violation of any regulation or order of the Administrator issued under section 214 of this title; except that no provision of this chapter shall impose any liability upon any common carrier for the transportation in commerce in the regular course of its business of any goods not produced by such common carrier, and no provision of this chapter shall excuse any common carrier from its obligation to accept any goods for transportation; and except that any such transportation, offer, shipment, delivery, or sale of such goods by a purchaser who acquired them in good faith in reliance on written assurance from the producer that the goods were produced in compliance with the requirements of this chapter, and who acquired such goods for value without notice of any such violation, shall not be deemed unlawful.

(2) to violate any of the provisions of section 206 or section 207 of this title, or any of the provisions of any regulation or order, of the Administrator issued under section 214 of this title;

(3) to discharge or in any other manner discriminate against any employee because such employee has filed any complaint or instituted or caused to be instituted any proceeding under or related to sections 201-219 of this title, or has testified or is about to testify in any such proceeding, or has served or is about to serve on an industry committee;

(4) to violate any of the provisions of section 212 of this title;

(5) to violate any of the provisions of section 211 (c) of this title, or any regulation or order made or continued in effect under the provisions of section 211 (d) of this title or to make any statement, report, or record filed or kept pursuant to the provisions of such section or of any regulation or order thereunder, knowing such statement, report, or record to be false in a material respect.

(b) For the purposes of subsection (a) (1) proof that any employee was employed in any place of employment where goods shipped or sold in commerce were produced, within ninety days prior to the removal of the goods from such place of employment, shall be prima facie evidence that such employee was engaged in the production of such goods. June 25, 1938, c. 676, Sec. 15, 52 Stat. 1068, as amended Oct. 26, 1949, c. 736, Sec. 13, 63 Stat. 919."

"§ 216. Penalties; civil and criminal liability

(a) Any person who willfully violates any of the provisions of section 215 of this title shall upon conviction thereof be subject to a fine of not more than $10,000, or to imprisonment for not more than six months, or both. No person shall be imprisoned under this subsection except for an offense committed after the conviction of such person for a prior offense under this subsection.

(b) Any employer who violates the provisions of section 206 or section 207 of this title shall be liable to the employee or employees affected in the amount of their unpaid minimum wages, or their unpaid overtime compensation, as the case may be, and in an additional equal amount as liquidated damages. Action to recover such liability may be maintained in any court of competent jurisdiction by any one or more employees for and in behalf of himself or themselves and other employees similarly situated. No employee shall be a party plaintiff to any such action unless he gives his consent in writing to become such a party and such consent is filed in the court in which such action is brought. The court in such action shall, in addition to any judgment awarded to the plaintiff or plaintiffs, allow a reasonable attorney's fee to be paid by the defendant, and costs of the action.

(c) The Administrator is authorized to supervise the payment of the unpaid minimum wages or the unpaid overtime compensation owing to any employee

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or employees under section 206 or section 207 of this title, and the agreement of any employee to accept such payment shall upon payment in full constitute a waiver by such employee of any right he may have under subsection (b) of this section to such unpaid minimum wages or unpaid overtime compensation and an additional equal amount as liquidated damages. When a written request is filed by any employee with the Administrator claiming unpaid minimum wages or unpaid overtime compensation under section 206 or section 207 of this title, the Administrator may bring an action in any court of competent jurisdiction to recover the amount of such claim: Provided, That this authority to sue shall not be used by the Administrator in any case involving an issue of law which has not been settled finally by the courts, and in any such case no court shall have jurisdiction over such action or proceeding initiated or brought by the Administrator if it does involve any issue of law not so finally settled. The consent of any employee to the bringing of any such action by the Administrator, unless such action is dismissed without prejudice on motion of the Administrator, shall constitute a waiver by such employee of any right of action he may have under subsection (b) of this section for such unpaid minimum wages or unpaid overtime compensation and an additional equal amount as liquidated damages. Any sums thus recovered by the Administrator on behalf of an employee pursuant to this subsection shall be held in a special deposit account and shall be paid, on order of the Administrator, directly to the employee or employees affected. Any such sums not paid to an employee because of inability to do so within a period of three years shall be covered into the Treasury of the United States as miscellaneous receipts. In determining when an action is commenced by the Administrator under this subsection for the purposes of the two-year statute of limitations provided in section 255(a) of this title, it shall be considered to be commenced in the case of any individual claimant on the date when the complaint is filed if he is specifically named as a party plaintiff in the complaint, or if his name did not so appear, on the subsequent date on which his name is added as a party plaintiff in such action. June 25, 1938, c. 676, Sec. 15, 52 Stat. 1068 as amended Oct. 26, 1949, c. 736, Sec. 13, 63 Stat. 919."

Note: Sec. 217 relates to proceedings for injunction and is not reproduced.

"§ 218. Relation to other laws

No provision of sections 201-219 of this title or of any order thereunder shall excuse noncompliance with any Federal or State law or municipal ordinance establishing a minimum wage higher than the minimum wage established under such sections or a maximum workweek lower than the maximum workweek established under such sections, and no provision of sections 201-219 of this title relating to the employment of child labor shall justify noncompliance with any Federal or State law or municipal ordinance establishing a higher standard than the standard established under such sections. No provision of sections 201-219 of this title shall justify any employer in reducing a wage paid by him which is in excess of the applicable minimum wage under sections 201-219 of this title, or justify any employer in increasing hours of employment maintained by him which are shorter than the maximum hours applicable under such sections. June 25, 1938, c. 676, Sec. 18, 52 Stat. 1069."

Appendix 11

THE UNITED STATES
ELECTRICAL MANUFACTURING INDUSTRY
AND
ITS RELATION TO THE
SECURITY, HEALTH, SAFETY AND WELFARE
OF THE COUNTRY

STONE & WEBSTER ENGINEERING CORPORATION

THE UNITED STATES ELECTRICAL MANUFACTURING INDUSTRY AND ITS RELATION TO THE SECURITY, HEALTH, SAFETY AND WELFARE OF THE COUNTRY

SUMMARY

The conclusions contained in this report of Stone & Webster Engineering Corporation as to the dependence of the security, health, safety and welfare of the United States upon the use of domestic-built electrical products have been summarized by Stone & Webster as follows:

THE ELECTRICAL INDUSTRY IN THE UNITED STATES AND ITS PLACE IN THE U. S. ECONOMY

The economy of this country, its great productivity and high standard of living, is dependent upon electric power and the proper equipment to use it. The extraordinary development of the U. S. economy has been made possible by the U. S. electric utility industry expanding its capacity and by the U. S. electrical manufacturing industry developing and producing the equipment for generating, transmitting and distributing electric power and for using it effectively and economically.

From 1946 through 1955, the electrical industry will have produced and put in service more electrical equipment than in the previous 70-odd years of its history. The generating capacity scheduled to be in place by 1955 will be more than double the 1946 capacity.

The continuous and uninterrupted supply of adequate electric power is essential to the industrial, agricultural and domestic economy and health of this country. Without such power the expansion of industry, the growth of agriculture and the improvement in the standard of living which have taken place would not have been possible.

RESEARCH, DEVELOPMENT AND SERVICES PERFORMED BY THE U. S. ELECTRICAL MANUFACTURING INDUSTRY

The great progress made in the United States in the use of electricity is due to the recognition of the great potential of this form of energy by users and producers of electrical equipment and their continuous cooperative effort to develop the equipment necessary to realize this potential.

There is intense competition among U. S. manufacturers to develop new and better equipment. This continuous development is accomplished with the funds of private companies, without government subsidy.

Standards for equipment are established which maintain that high degree of reliability and high quality of electrical service accepted as commonplace in this country.

Progress in establishing international standards has been slow as U. S. representatives, at meetings held for this purpose, have refused to lower U. S. standards and European representatives, seemingly content with their lower standards, have declined to raise their standards to our level.

The research, development and planning service so essential to the continuing expansion and increased availability of power in the United States is supported by the sale of electrical products. Such service is not available in this country from others than the U. S. electrical manufacturing industry. Foreign manufacturers do not incur a proportionate share of the cost of this research, development and planning service and are therefore in a favorable position in competitive bidding if price alone be considered.

Comparative Aspects of U. S. and Foreign-Built Equipment. U. S. built equipment generally is capable of operating above capacity. This was a significant factor in the outstanding performance of U. S. industry during World War II.

It is the generally accepted opinion of engineers in the United States that foreign manufactured equipment does not have the capacity or reliability of equipment furnished by U. S. manufacturers.

Maintenance Service by the U. S. Electrical Manufacturing Industry. The U. S. electrical manufacturing industry undertakes the installation, maintenance and servicing of its products throughout the country. For this purpose, it maintains an extensive field service organization of highly skilled specialists in all types of electric products whose activities include, among other things, installation, preventative maintenance and repair of equipment.

The ability, knowledge and skill of these field forces has established the general reputation of U. S. built equipment for efficient operation to full capacity promptly following its installation without long "shake-down" periods during which realignment and readjustment of parts and components are made. Standards prevailing in this aspect of the work compare with those for the production itself.

It is not uncommon for one U. S. manufacturer to maintain or repair products of another. This derives from the development of more or less common standards in this country and the familiarity which each manufacturer has with the products of his competitors. American maintenance and production methods are sufficiently standardized to permit this practice.

A corresponding ability by U. S. manufacturers to maintain or repair foreign-built equipment does not exist for a number of reasons, including differences in basic design and manufacturing practices.

In the event of war or other disaster, the burden for maintenance and repair would, in all probability, rest solely upon the U. S. electrical manufacturing industry. The delays which could be expected if any material amount of foreign-built equipment were installed may be anticipated as a result of numerous unsatisfactory experiences with foreign-built equipment in Latin-American countries in World War II.

Installation of large electrical units involves intimate knowledge of the entire electrical system by the manufacturer. This is significant when it is recognized that these units are the heart of utility and industrial systems and of many highly classified military and governmental installations, and when the possibilities of sabotage and bombing with this intimate knowledge in the hands of foreign nationals are considered.

The Disaster Service Record of the U. S. Electrical Manufacturing Industry. The U. S. electrical manufacturing industry has assumed important responsibilities in emergencies, such as the disasters caused by flood, fire and explosion.

There have been many such disasters for which the electrical manufacturers have mobilized personnel, equipment and materials from their many facilities and field organizations, often pursuant to previously developed disaster plans.

It is evident that foreign manufacturers could not render an equivalent service.

In such disasters as the Eastern Seaboard Hurricane of 1938 or the Kansas City Flood of 1951, not only was the economy of the stricken area seriously affected, but also the economy of many others depending on the area. The ability of the industry to assemble trained personnel from all over the country and to make its facilities available was invaluable in minimizing the effect of the disaster and restoring the economy and life of the area with relatively limited delay. The great distances between manufacturing plant and site location of equipment and the absence of large service forces available for concentration in a given area would, if foreign-built equipment were involved, have resulted in a substantially longer disruption of local life and economy and substantially greater financial and economic losses than actually occurred.

EXPERIENCE WITH ELECTRICAL EQUIPMENT PURCHASED FROM FOREIGN MANUFACTURERS

Experience with equipment of foreign manufacturers, drawn from instances in which U. S. electrical manufacturers were asked to service, replace, or rebuild such equipment, clearly indicate the hazards of purchasing essential equipment from foreign manufacturers. There have been many instances documenting this conclusion in Latin-American countries.

The U. S. power supply could face serious emergencies arising from substantial delays and expense in overhauling and replacement of foreign-built equipment and in adapting U. S. designed equipment for use with foreign equipment if it is dependent upon such foreign-built equipment.

POSSIBLE EFFECTS OF INTRODUCTION OF FOREIGN-BUILT EQUIPMENT IN THE UNITED STATES

The experience with equipment and service provided by foreign manufacturers, particularly at times of stress such as war, indicates that they cannot be depended upon to deliver essential equipment as needed nor to service that equipment after it is installed. For a number of reasons, including differences in basic design, manufacturing practices and specifications, it would be difficult for electrical manufacturers in the United States to repair or service such equipment.

If very much essential electrical equipment is purchased from foreign manufacturers for installation in the United States some reduction in the rates of expansion and the rate of operation of American industry and of agricultural and civilian utilization of electric power can be expected. Reference is made to the following pages of the full report for details.

THE UNITED STATES ELECTRICAL MANUFACTURING INDUSTRY AND ITS RELATION TO THE SECURITY, HEALTH, SAFETY AND WELFARE OF THE COUNTRY

INTRODUCTION

The National Electrical Manufacturers Association commissioned the National Industrial Conference Board to make a study of certain aspects of the foreign trade of the United States as it affects the electrical manufacturing industry. A part of the study involved the dependence of the security, health, safety and welfare of the United States upon the use of domestic-built electrical products. Because any factual study in this field necessarily involves experience and knowledge of the engineering and other factors involved in the industry, the National Industrial Conference Board requested Stone & Webster Engineering Corporation to prepare that phase of the study.*

This report, covering that phase of the study, includes information accumulated in the following general categories:

I The electrical industry in the United States and its place in the United States economy.

II Research, development and services performed by the U. S. electrical manufacturing industry.

III Experience with electrical equipment purchased from foreign manufacturers.

IV Possible effects of introduction of foreign-built equipment in the United States.

SOURCES OF INFORMATION

Information for the preparation of this report has been derived from the following sources:

United States Census

Federal Power Commission

United States Bureau of Labor

Edison Electric Institute

National Industrial Conference Board

Magazine articles relating to the electrical utility industry

Manufacturers of electrical equipment

Experience and background gained by Stone & Webster in its engineering consulting and construction work in the electrical field over the past 64 years.

*The analysis and conclusions included herein were independently prepared by Stone & Webster Engineering Corporation. The National Industrial Conference Board expresses no opinion or views on the subjects treated in this study.

There is a relatively small amount of foreign-built electrical equipment and related facilities in operation in the United States. Although large orders for electrical equipment have been placed in the past few years with foreign manufacturers by U. S. publicly-owned electric utilities and, to a much lesser degree, by industries, this equipment either has not yet been delivered or has been in service for such a brief period as to preclude the possibility of securing a significant performance record. Experience with foreign-made electrical products readily replaceable in their entirety by United States manufactured items serving the same purpose has not been considered in this study. These products consist primarily of smaller, standard types of equipment and goods, as distinct from large custom-built equipment and goods, concerning which reports would in the normal course be widely scattered and not readily available. The effect of accident to, or failure of, foreign-built equipment in the United States is necessarily based on the meager experience with it in the United States and the experience with such equipment in foreign countries to the extent that information as to that experience is available.

THE ELECTRICAL INDUSTRY IN THE UNITED STATES AND ITS PLACE IN THE U. S. ECONOMY

General Growth in Use of Electrical Power. One of the most significant developments in the American economy since World War II is the greatly increased use of electrical power for all purposes. Electric energy produced by all plants contributing to the public supply, in terms of kilowatt hours, increased from 223 billion in 1946 to 399 billion in 1952. Electric energy generated by industrial plants, railways, railroads and others for their own use increased from 46 billion kilowatt hours in 1946 to 64 billion kilowatt hours in 1952. The increase in total electrical energy used from 1946 to 1952 is therefore 194 billion kilowatt hours, which is 72 per cent of the total used in 1946.

To accomplish this, the electric utilities in the United States increased the capacity to produce electricity, in terms of kilowatts, from 50 million in 1946 to 84 million in 1952. Industrial plants and others generating for their own use increased generating capacity in the same interval from 13 million kilowatts to 15 million kilowatts.

In addition, generating capacity scheduled for installation in the years 1953 through 1955 is approximately 36 million kilowatts, which will bring total generating capacity to more than 135 million kilowatts in 1955, as contrasted with only 63 million kilowatts in 1946. This is more than double the 1946 capacity.

Appreciation of the magnitude of this development should not be lost in the numbers. In the relatively short time of nine years from 1946 through 1955, the electrical industry will have produced and put in service more electrical equipment than was produced and put in service in the previous 70-odd years of its history.

Significance to Industry of Increased Availability of Power. Particularly significant is the increased use of electric power by industry. In 1951 all U. S. manufacturing industries used approximately 196 billion kilowatt hours, which is about 53 per cent of the total energy available for use. Since 1946 electrification of industrial processes has proceeded

rapidly. This trend is best illustrated by the average electrical energy used by each production worker in manufacturing industry.

	Average Annual Kilowatt Hours per Production Worker
1941	9,525
1946	10,077
1951	14,895

In the five-year period 1941 to 1946, the increase in average electrical energy used by each worker was less than 6 per cent; from 1946 to 1951 the increase was 48 per cent, or more than eight times the rate for the previous five-year period.

The object of such mechanization is to increase productivity, and so to increase American productive capacity, with a relatively fixed labor force. This objective has been achieved as shown by the increase in output of the manufacturing industries, disclosed by the Federal Reserve Board Index of Industrial Production for Manufacturers, which is the commonly accepted measure of physical production, from 177 in 1946 to 229 in 1951. The estimated annual average number of production workers in the manufacturing industries between 1946 and 1951 increased by about 8.5 per cent. An increase in production of 29.4 per cent has been accomplished with an increase of 11 per cent in the number of production workers. A small part of the increase in production was due to an increase in the average hours worked of approximately one per cent between 1946 and 1951. The increase in the number of man hours worked is approximately 12 per cent.

A check of average wages paid to production workers in manufacturing industries and the consumers price indices for the years 1946 and 1951 shows an increase in "real wages" of about 11 per cent; even with the increased tax burden there has been an increase in spendable income of approximately 7 per cent; a marked increase in the standard of living.

A continuous, uninterrupted supply of electric power in the United States has been so nearly achieved that American industries expect it, depend on it and have expanded and adjusted their operations to this expectation. This is particularly true of the many automatic or continuous processes which are characteristic of American modern efficient operations.

A power failure may result in serious and expensive damage to equipment, substantial loss of materials, and even plant shutdowns for extended periods of time with loss of wages and production. The effect of such plant shutdowns may extend to other industries and communities dependent on material from those plants.

The continuous and uninterrupted supply of adequate electric power is essential to the industries of this country. Without such power the expansion of industry which has taken place in the last fifteen years would not have been possible.

Significance to Agriculture of Increased Availability of Power. The use of electric power in agriculture has increased rapidly in the past thirty years. From nearly 200,000

farms served with electricity in 1923, electric service was extended to 1,400,000 farms in 1938. In 1950 approximately 80 per cent of the occupied farm dwellings were electrified. Electric power was used for household and general farm purposes, as well as for irrigation in many areas.

As in industry, utilization of electric power in agriculture is increasing spectacularly. Eastern farms in the United States used an average of 2,639 kilowatt hours in 1951. Farms in the west, where electric power is used for pumping water for irrigation, used an average of 6,548 kilowatt hours in 1951. The average residential use in 1951 throughout the country was 2,004 kilowatt hours.

American farmers, today, use electric power for many operations extending from milking to irrigation and for many labor saving household appliances.

Agricultural production has become increasingly dependent on electricity as the farm labor force has declined.

The expansion in agricultural production in this country over the past twenty years, required to feed the increased population, is due, in considerable measure, to adequate, uninterrupted electric power.

Significance of Increased Availability of Power for Use in the Home. Twenty-five per cent of the total electric energy sold in 1952 was used in American homes. In 1952, about 97 per cent of the nation's families were using electric service. The average number of kilowatt hours used per residential customer in the United States increased from 1,329 kilowatt hours in 1946 to 2,169 kilowatt hours in 1952. About 422,000,000 electrical appliances are used in United States homes. Most families have at least seven different types. In 1952, 40,700,000 families were using, among others, the appliances listed below:

Refrigerators	37,750,000
Water heaters	5,800,000
Ranges	10,200,000
Electric washers	32,200,000
Electric irons	37,800,000
Electric irons, Steam	8,300,000
Electric ironers,	3,900,000
Vacuum cleaners	25,100,000
Radios	43,700,000
Television sets	19,800,000

Something over 5,000,000 homes are heated by oil burners or gas furnaces, the operation of which depends on electric motors and controls.

Practically all water used for public consumption and for fire protection is pumped by electrically driven equipment.

The high standard of living enjoyed in this country is largely due to the use of electric power. The extent to which Americans depend on electric power is only fully realized when it is lost through disasters such as hurricanes, floods and fires. The civilian life of communities affected is completely disrupted. Emergency sources of supply are made

available to hospitals as soon as possible, with other essential community services being given priority before the benefits of heat, light, refrigeration and other commonly accepted services which electric power provides in ordinary life are restored to houses.

From the foregoing it is evident that the entire economy of this country, its great productivity and high standard of living, is dependent upon electric power and the proper equipment to utilize it in industry, on the farm and in the home. The extraordinary development of the American economy has been made possible by the U. S. electric utility industry expanding its capacity and by the U. S. electrical manufacturing industry developing and producing the equipment for generating the power requirements of the country, for transmitting and distributing that power and for using it effectively and economically. This development and expansion of the electric utility industry and the electrical manufacturing industry has been accomplished through the expenditure of many billions of dollars in capital improvements and the steady advance in the electrical art augmented by research and development carried on by the companies. No other country in the world has even approached this achievement.

RESEARCH, DEVELOPMENT AND SERVICES PERFORMED BY THE U. S. ELECTRICAL MANUFACTURING INDUSTRY

The great progress made in the United States in the use of electricity to lighten burdens and at the same time to increase the productive capacity of the nation is not accidental. This progress is due to the recognition of the great potential of this form of energy by users and producers of electrical equipment and, what is important, their continuous cooperative effort to develop the equipment necessary for practical realization of this potential.

That there is a group of highly trained scientists and engineers in the electrical manufacturing industry in the United States which is continuously contributing to the progress of the country is well known. However, the number engaged, the extent of their effort, the facilities provided, and the nature of the service rendered is not so well known and deserves attention.

It is significant that 19.8 per cent of the scientists and engineers engaged in all manufacturing industries in this country in 1951 were working in the electrical manufacturing industry. Of the funds expended for research and development by all the manufacturing industries in 1951, 24.5 per cent was spent in the electrical manufacturing industry. Part of this work is directly related to the defense effort. The personnel engaged in classified work for the Army, the Navy or the Atomic Energy Commission must be cleared for this purpose.

The funds expended for research and development in the electrical manufacturing industry amount to 3.6 per cent of the sales dollar. The corresponding amount spent by all manufacturing industry is 0.71 per cent. This means that the rate of expenditure for research and development in the electrical manufacturing industry is five times the rate for all industry.

Those who are outside of the electrical manufacturing industry but who work continuously with it are well aware of the intense competition among manufacturing companies to develop new or better equipment to gain competitive advantage over the rest of the industry in the widely varying types of equipment from the most complicated custom-built heavy equipment to the mass-produced consumer items. This continuous development is accomplished with the funds of private companies, without government subsidy. In spite of this intense competition, information on these developments is exchanged and widely publicized in publications of the professional societies which are actively supported by all members of the electrical industry. Practically every engineer and scientist in the industry is a member of one or more of the professional societies. They have contributed to the establishment of standards for equipment, in cooperation with its users, which maintain that high degree of reliability and high quality of electrical service accepted as commonplace in this country.

Since World War II, many engineers of the U. S. electrical manufacturing industry and electric utility industry have participated in international meetings with engineers from other countries, principally the European countries, in an effort to establish international standards for electrical equipment.

However, progress has been slow. American representatives in these meetings have refused to lower U. S. standards. On the other hand, European representatives, seemingly content with the lower standards in their own countries, have declined to improve them to the American level.

Examples of the developments which are peculiar to this country are found in the extent of the improvement in the efficiency of steam generating stations, the increase in the capacities of power equipment, the development and manufacture of high-speed production equipment in many fields of industry from heavy steel rolling to the most sensitive production controls and the spectacular increase in the use of electrical appliances in the home.

The engineers and scientists of the U. S. electrical manufacturing industry are ready at any time to assist the users of electrical equipment. One of the most important services rendered by engineers of the electrical manufacturing industry is the assistance given in coordination and planning in this field.

An illustration of such service may be found in the planning of a large hydro-electric development wherein the consulting engineers charged with the responsibility for planning, called upon the engineers of many companies in the electrical manufacturing industry to assist them in the selection of the type, size, speed and other characteristics of the equipment for the generation, transmission and distribution of the power. The engineers of the electrical manufacturing industry made many preliminary designs of equipment, studied many arrangements for it and made many cost studies to the end that the project could be built with greatest economy. This planning, from its initiation to the issuing of final specifications, required five years. This assistance was given without specific compensation to the members of the industry participating in it.

The result of all of this effort, the final specifications, represented the combined experience of all of the engineers and manufacturers in the United States interested in this

development. The service given by the engineers of the electrical manufacturing industry is a service which this industry provides normally. All of those engaged in the electrical industry know that this service is available. For example, an engineer of an electric utility needing information or advice, calls the local representatives of the electrical manufacturing industry and acquaints them with his need. Information requested may range from a question concerning the operation of a particular machine to long-range basic planning of a transmission line of new design requiring considerable research. If the information cannot be supplied locally, the manufacturer's representative relays the request to his headquarters where comprehensive information is available. The rapid interchange of information so obtained is partly responsible for the rate of development of the industry.

This research, development work, and the planning service so essential to the continuing expansion and increased availability of power in the United States, is supported by the sale of electrical products.

Such service is not available in this country from others than the U. S. electrical manufacturing industry. Foreign manufacturers do not incur a proportionate share of the cost of this research, development and planning service and are therefore in a favorable position in competitive bidding if price alone be considered.

Comparative Aspects of U. S. and Foreign-Built Equipment. American industry recognizes that rugged reliable electrical equipment is essential to continuous, economical output. High standards have been established for such equipment in the United States.

The electrical manufacturing companies in the United States have responded by building equipment which is generally better than required by specifications based on established standards. In part this is recognition of the fact that specifications and standards necessarily set minimum acceptable performance and cannot satisfactorily define quality which assures long reliable service. In part it is due to the highly competitive nature of the electrical manufacturing industry and the manufacturers' sensitivity to maintenance of their reputations and positions in the industry.

That U. S. built equipment generally is capable of operating above capacity was a significant factor in the outstanding performance of American industry during World War II. During the war when power demands rose above the rated capacity of the electric utility industry, the utilities were able to operate equipment well above rated capacity. This practice has continued since the war and the ability of U. S. built equipment to tolerate such overloads is recognized in statistics on capability of the Edison Electric Institute.

As pointed out, American standards for equipment are higher than corresponding standards in foreign countries. It is the generally accepted opinion of engineers in the United States that foreign manufactured equipment does not have the capability or reliability of equipment furnished by United States manufacturers.

Maintenance Service by the U. S. Electrical Manufacturing Industry. The U. S. electrical manufacturing industry undertakes the installation, maintenance and servicing of its products throughout the country. For this, it maintains a field staff consisting of over 3,000 engineers and over 5,000 technicians and highly skilled workers located widely

throughout the United States. These are additional to the research, development and design engineering staffs. The geographical coverage is such that within a few hours practically every important power generating station or manufacturing plant can be reached. Supporting this service are manufacturing plants in many cities across the country, well equipped repair shops located in every important center and warehouses for finished parts, complete products and materials. The personnel which supervise and perform this field work must have adequate training and an intimate knowledge of the products. They include specialists in all types of electrical products, from the large custom-built heavy equipment to mass-produced consumer goods.

The activities of these field engineers and technicians include the installation of the equipment, preventative maintenance to insure its continued effective operation and repair of accidental damage. They also train and instruct the personnel of the user in the effective and efficient operation of the product. The larger equipment must be shipped from the factory in parts and assembled in the field and its highly complex nature requires expert knowledge and handling.

The ability, knowledge and skill of the field forces of American manufacturers has established the general reputation of U. S. built equipment for efficient operation to capacity promptly following its installation and without long "shake-down" periods during which realignment and readjustment of parts and components are made. Standards prevailing in this aspect of the work of the U. S. electrical manufacturing industry compare with those for the production of the equipment itself.

While the foregoing comments relate to heavy custom-built equipment, similar services are provided in other lines of electrical industrial, agricultural and consumer products. No manufacturer of consumer goods will enjoy volume sales without good consumer reputation, which to a large degree is dependent upon the calibre of the service forces which are provided for the installation and servicing of his appliances throughout the country.

It is not uncommon for the service forces of one American manufacturer to maintain or repair products of another. This derives from the development of more or less common standards in the United States and the familiarity which each manufacturer has with the products of his competitors. American maintenance and production methods are sufficiently standardized to permit this practice in the industry.

However, a corresponding ability by U. S. manufacturers to maintain or repair foreign-built equipment does not exist. This difficulty arises from differences in standards, fundamental differences in designs and materials, unavailability of drawings and specifications, the use of different units of measurement in foreign-built equipment, and the greater use of hand labor to fit specific parts into given equipment with the consequent lack of standardization of parts.

The significance of maintenance and repair of electrical products of all types is clear. In the event of war or other disaster, the burden for maintenance and repair would, in all probability, rest solely upon the U. S. electrical manufacturing industry. Its ability to service U. S. built equipment has been established on numerous occasions. The

delays which could be expected in the event any material amount of foreign-built equipment and products were installed may be anticipated, from the experiences of various Latin-American countries during World War II. Extended delays in the restoration of electrical service and the rehabilitation of equipment and products utilizing electric power can be anticipated in the absence of qualified and adequate service departments. Foreign equipment manufacturers do not maintain service departments comparable to those available from U. S. manufacturers.

One other aspect of foreign-built equipment may be pointed out. The installation of large electrical units necessarily involves intimate knowledge of the entire electrical system by the manufacturer of the equipment. The significance of this is apparent when it is recognized that the electrical units are the heart of utility and industrial systems and of many highly classified military and governmental installations, and when one considers the possibilities of sabotage and bombing with this intimate knowledge in the hands of foreign nationals.

The Disaster Service Record of the U. S. Electrical Manufacturing Industry. The electrical manufacturing industry of the United States has assumed important responsibilities in emergencies, such as the disasters caused by flood, fire and explosion. Their engineers, technicians, highly skilled workmen, as well as their manufacturing plants, local repair shops, inventories of finished products and materials have been made available immediately for restoration to normal service of damaged electrical equipment and products. The pool of more than 8,000 experienced engineers, service men, technicians and highly skilled workers is drawn upon to send to a stricken area on short notice. It is impossible to estimate the material and equipment which could be made available, including facilities which could be improvised from local resources, by the ingenuity of these workers. It is evident that foreign manufacturers could not render an equivalent service irrespective of their natural desire to restore to service equipment of their own manufacture and this necessarily would be left largely to the U. S. manufacturers, assisted by any advisory personnel, materials and parts which could be flown into the area from abroad or from depots in the United States. It is also evident that personnel, materials and parts of foreign manufacturers in the United States are limited in amount and variety as compared with those of the U. S. manufacturers.

Some of the U. S. electrical manufacturing companies, out of their past experiences, have developed well-defined plans for disaster emergencies, with instructions for mobilization of their personnel and resources upon notification of the disaster.

There have been many such disasters for which the electrical manufacturers have mobilized personnel, equipment and materials from their many offices, service centers, warehouses, repair shops, and manufacturing establishments.

Notable among the more recent disasters involving substantial quantities of electrical manufactured products may be named the following:

The Connecticut River Valley Flood of 1936
The Eastern Seaboard Hurricane of 1938
The Texas City Explosion in 1947
The Kansas City Flood in 1951

In addition to the foregoing, there should be mentioned the extensive and important repair of electrical apparatus and products of many kinds of United States Navy and Merchant Marine ships during World War II.

The Eastern Seaboard Hurricane. This hurricane struck the New York City Metropolitan Area in September of 1938. After three days of rain a tidal wave flooded power plants in New York City, on Long Island and in Connecticut. Engineers and other personnel of the U. S. electrical manufacturing industry converged on the area from all over the country. Flooded equipment was removed as fast as possible and sent to service shops for drying, rewinding and repairs. New electrical equipment for replacement was sent from stocks in other locations and delivered by rail and truck in some instances under police escort. Large generating equipment was dried out and put in service. In a few days the crisis was past, due to the availability of personnel and facilities not far from the site of the disaster. Soon thereafter the electric service was normal in so far as the electrical consumer knew, although a longer time was required before the utility was satisfied that service was adequately protected.

The Kansas City Flood. On Friday, July 13, 1951, a flood inundated the Kansas City industrial area in Missouri and Kansas at the confluence of the Missouri and Kaw Rivers. The large meat packing industry, as well as oil refining and many smaller industries, were completely shut down. The ignition of oil floating on the flood waters added to the disaster. While the electric production facilities of Kansas City, Missouri, were above the flood those in cities in Kansas were submerged. Transformers and other distribution equipment, as well as motors and other electric utilization products, in industries and in homes were completely covered by the muddy flood.

Citizens, farms, industries and governments fought to forestall and then minimize damage to residences, farms, industries and commercial establishments and later worked day and night to rebuild and replace damaged equipment and buildings.

The electrical manufacturers invoked their previously prepared disaster plans without delay and dispatched to the scene within a day company officials and engineers to survey the damage, plan the restoration, arrange for building space for cleaning and repair of apparatus and notify their headquarters offices of the numbers of engineers, technicians and skilled workers required, as well as special equipment tools, parts and new pieces of equipment desired.

The local shops of the manufacturers were inadequate for the work and about 100,000 square feet of additional local space were procured and equipped with apparatus trucked for hundreds of miles from other service centers. Drying ovens were brought in and others were constructed from local materials and parts shipped to the improvised shops. Vacuum drying tanks, steam cleaners, vapor degreasers, caustic and solvent tanks, shop trucks and hoists, paint spray booths and equipment, testing instruments, motor and other equipment parts and materials for repairs arrived. Within a few days about 1,000 new motors and starters, lightning arresters, tank cars of transformer oil, drums of insulating varnish, and large quantities of renewal parts were flowing into the city from various stock centers,

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as well as trucks for the transportation of flood damaged equipment from customers' premises to the improvised shops for repair and return to service.

From various places in the United States, some as distant as 1,000 miles, came more than 150 engineers and service specialists for directing and performing this work and for testing the restored apparatus to insure its suitability for use. In addition, about an equal number of local people were employed to assist in the work which was carried on around the clock.

The highest priority was given to the water pumping plant. Second, was the work for the electric utility systems. On Sunday, two days after the flood, trucks waited on a viaduct to pick up equipment from the flooded water pumping station. This was delayed for another day because of the oil explosion and fire.

The generating and other equipment in the power stations in Kansas, which were covered with a hard cake of dried silt, difficult to remove, were restored to service. It is estimated that over 2,000 motors, 300 transformers and 500 pieces of switchgear were reconditioned for service. About 400 home refrigerators were repaired and reconditioned, as well as numerous other home appliances. About 95 per cent of the motors and transformers did not require rewinding. Those that did were sent elsewhere for this work where it could be done more expeditiously than possible in the disaster area with its overworked personnel.

In the process of reconditioning many new items of equipment were brought in to replace the damaged ones because they were available from stocks elsewhere.

In the case of each of such disasters not only was the economy of the stricken area seriously affected, but also the economy of many others depending on the area. The ability of the electrical manufacturing industry to assemble and concentrate trained workers from all over the country at the point of disaster and to make manufacturing facilities available throughout the country was invaluable in minimizing the effect of the disaster and restoring the economy and life of the area with relatively limited delay. The great distances between manufacturing plant and site location of equipment and the absence of large service forces available for concentration in a given area would, in so far as foreign-built equipment is concerned, have resulted in a substantially longer disruption of local life and economy and substantially greater financial and economic losses than actually occurred.

EXPERIENCE WITH ELECTRICAL EQUIPMENT PURCHASED FROM FOREIGN MANUFACTURERS

Experience with equipment of foreign manufacture, drawn from instances in which American electrical manufacturers were asked to service, replace, or rebuild such equipment, clearly indicates the hazards of purchasing essential equipment from foreign manufacturers. Several cases of interest follow:

One large public utility company reports the great difficulty it experienced with a very large foreign-built turbine generator purchased a few years after the end of World War I.

For a period of about 10 years attempts were made to correct defects in the turbines by the foreign manufacturer and a United States manufacturer during which period the machine was out of service about forty-five per cent of the time due to failure in operation or to corrective work being done on it. Eventually, and before World War II started, the turbines were completely redesigned and rebuilt by a United States manufacturer and they have given very satisfactory service since. In 1943 one of the electric generators of this machine developed defects and was rewound by a United States manufacturer who two years later replaced it in its entirety. Since that time this turbine generator has given satisfactory service.

This public utility company also reports much less serious trouble with a foreign-built frequency changer which was readily corrected with new parts designed and made by a United States manufacturer. It also reports satisfactory service of certain low voltage switchgear, high voltage cable and time switches of foreign manufacture not available in the United States at the time of purchase. However, this public utility has not purchased foreign-built equipment since.

A publicly owned electric utility in the United States purchased two foreign-built turbine generators of substantial size. Except for the fact that the rotors had to be rebalanced after being placed in service, the units are giving satisfactory service. Representatives of a United States manufacturer who inspected the machines report that in many respects they have design features no longer used in the United States.

Experience with Foreign-Built Equipment in Latin America. During the period of World War II and the years following it, U. S. manufacturers were called upon in numerous instances to supply major elements of equipment, major components, spare parts and maintenance service for foreign-built equipment in various Latin-American countries because of the inability of the foreign manufacturers to provide supplies and service. Both with respect to equipment which was completely installed and operating before the war and equipment which was on order and not delivered because of the war, common difficulties were encountered. Adequate drawings and specifications were not available to the U. S. manufacturers. Designs were basically different from U. S. designs and required special tooling and other facilities for production. The cost of providing the equipment parts and maintenance service was high compared to that which would have prevailed with U. S. equipment. The equipment in question was not in service for periods from several months to as much as six years with resultant losses to the over-all economy.

Instances in which U. S. manufacturers were called upon to provide equipment parts and service include the following:

(a) The installation of a European-built steam turbine generator in a Latin-American city, installed and placed in operation shortly before the war in Europe commenced, in which the blading failed and the unit became inoperative in a comparatively short time.

(b) Two hydro-electric generating units installed in the early 1930's for a Latin-American municipality which had ordered two more units for which the civil engi-

neering and construction work had been completed when the war broke out and the foreign-built equipment became unavailable.

(c) The failure of a Latin-American country to receive delivery of a European-built hydro-electric plant scheduled for completion in 1940 with the result that a completely new project had to be negotiated which was not completed in all phases until 1946.

(d) The failure of a turbine spindle installed by a European manufacturer in 1939 in a Latin-American industrial company, followed by inability to obtain a replacement from the manufacturer, because of war-time priorities, and long delays in obtaining from another European country a spindle which had to be shipped across Asia and the Pacific Ocean before installation.

(e) The failure of a large motor of a European manufacturer in an important industrial plant in Latin-America, and subsequent substantial engineering work and delay in the United States before the motor could be rehabilitated, as a result of which the industrial company has purchased few, if any, electrical products since the war from sources other than the United States.

(f) The recurrent failure of coils in four large hydro-electric generators in a utility plant in Latin-America, beginning in 1943, with the recurrent demand upon the American industry to supply substitutes, all involving the loss of one or more of the four generators from service for most of a four-year period.

(g) The inability of a Latin-American country to receive delivery of turbines, generators and other equipment for a large hydro-electric plant for which all of the civil engineering and construction work was completed, requiring completely new designs by American manufacturers of equipment which would fit the structures already completed at wide variances from normal U. S. practices.

While these specific examples are cited, a number of others, fully documented, could be added to the list, all involving substantial delay and great expense in the overhaul and replacement of foreign-built equipment. In numerous cases, difficulty, expense and delay were encountered in adapting U. S. designed equipment for use with European equipment.

The likelihood that the U. S. power supply could face similar emergencies because of dependence upon foreign-built equipment is evident. The consequences to the economy in this country, particularly in the event of a war, need no elaboration.

POSSIBLE EFFECTS OF INTRODUCTION OF FOREIGN-BUILT EQUIPMENT IN THE UNITED STATES

Any evaluation of the effect of the introduction of foreign-built equipment into a specific area in the United States should take into consideration the information contained in the foregoing pages. The Pacific Northwest is an area of particular significance in this connection.

The development of this area is of great importance to the United States. Much of the expansion of the electrolytic process industries for production of aluminum, phos-

phorus and the recently significant titanium is planned for this area. It is the home of substantial aircraft production. During the war a substantial shipbuilding industry prevailed in the area. It is of great economic and strategic importance to the United States in many respects.

The plants generating power in this area are relatively large hydro-electric developments with power generation concentrated at the natural sites for the necessary dams. Grand Coulee with well over 2,000,000 kilowatts of generating capacity is the largest single power plant in the world. Other large plants include Bonneville with 500,000 kilowatts of capacity, Hungry Horse with 300,000 kilowatts, Ross 180,000 kilowatts, Cabinet Gorge 200,000 kilowatts, and Rock Island 245,000 kilowatts. The first unit at McNary Dam is in operation and by 1956 this plant will be generating over 1,000,000 kilowatts. Chief Joseph, soon to go into operation, will generate over 1,100,000 kilowatts.

The industries where this power is used are concentrated in areas many miles from the power plants. High voltage transmission lines carry the power from the plants to the load. Generally the terrain forces concentration of the transmission lines into relatively narrow areas. Substations where the lines terminate, where the lines are switched, and where the power is transformed to lower voltage for distribution are large.

Economical design demands that the units making up the power system—transformers, circuit breakers, and generators—be large in size. The equipment furnished by the electrical manufacturers in the United States has proven so reliable that it is becoming the practice to omit spare equipment especially transformers and circuit breakers.

The equipment necessary to maintain development of the power system has been delivered on time by the electrical manufacturers in the United States so that all projects in so far as the electrical equipment is involved are proceeding on schedule. Whenever it has been necessary, the manufacturers have provided the service to maintain the power system at full capacity.

During the war generators at Grand Coulee of a rated capacity of 108,000 kilowatts operated continuously at over 125,000 kilowatts; two generators intended for another plant, each rated 75,000 kilowatts, were installed at Grand Coulee and operated at over 90,000 kilowatts during the war. Even with such overloading the equipment was well maintained and serviced by the manufacturers and there were no significant outages which impaired the productive capacity of the aluminum plants, the aircraft factories, the shipyards and other strategic installations. Had the equipment been purchased abroad, a large part of this power generated would not have been available, and the equipment would not have been as well maintained and serviced with the result that prolonged outages might have occurred with consequent damage to the war effort of the country.

With the relatively large power transformers, circuit breakers, and generators employed in this power system, failure and subsequent outage of any unit is a serious matter as the whole area might be affected for a time. It might have to operate at reduced capacity while the equipment is being repaired or replaced. This would mean a reduction in essential electric service affecting industry and homes throughout the large area.

The experience with equipment and service provided by foreign manufacturers of electrical equipment, particularly at times of stress such as war, indicates that they cannot be depended upon to deliver essential equipment as needed nor to service that equipment after it is installed. Because complete information, drawings and specifications, for equipment furnished by foreign manufacturers are not available, and because of differences in basic design and manufacturing practices, it would be difficult for electrical manufacturers in the United States to repair or service such equipment.

If very much essential electrical equipment is purchased from foreign manufacturers for installation in the United States some reduction in the rate of expansion and the rate of operation of American industry and of agriculture and civilian utilization of electric power can be expected.

STONE & WEBSTER ENGINEERING CORPORATION

APPENDIX 12

The Foreign Trade Position of The United States and The Electrical Manufacturing Industry of The United States

By
O. GLENN SAXON

INTRODUCTION

In August, 1953, upon announcement by the President of the United States of the establishment, under authorization by Congress, of *The Commission on Foreign Economic Policy* to study and report to Congress its recommendations with respect to a constructive economic foreign policy for the United States, the *National Electrical Manufacturers Association* commissioned the *National Industrial Conference Board* (a nationally recognized research agency) to make a strictly factual and objective survey of the present competitive position of the Electrical Manufacturing Industry in international trade.

With the full cooperation of the U. S. Department of Commerce and other federal agencies, the Conference Board has developed a *Report* that constitutes a substantial volume of statistical and other factual data relating to the Industry, its exports to foreign countries and competitive imports from abroad. In addition, the Board has prepared its own *Summary* of the Report with its conclusions therefrom. The Report covers many important factors relating, not only to special foreign trade problems of the Industry, but also to the entire area of international trade and finance in the post-war and cold-war world.

The Conference Board sub-contracted to the Stone & Webster Engineering Corporation that part of the survey that relates primarily to the operations of the U. S. electrical system. Meanwhile, the National Electrical Manufacturing Association also requested Donovan, Leisure, Newton and Irvine to prepare an analysis of the legal problems of the Industry with respect to tariffs and related subjects.

This Analysis presents an economic appraisal and interpretations of the factual data and conclusions of the various Reports, as well as other research data developed by governmental agencies or by the author, that relate to foreign trade problems of the Industry and to the foreign economic policies of the United States, past, present and future. This analysis undertakes to coordinate all these data and to present them and the problems they raise in their proper historical setting, as well as to relate them to the increasingly competitive conditions and complicated problems of international aid, trade and finance in the foreseeable future.

A considerable portion of the factual and statistical data contained in these various *Reports* and this analysis of them has never before been made available for public use.

The analysis covers many new, as well as highly controversial, issues which have arisen in recent years due to changing post-war conditions. It focuses attention on, and attempts to weigh the effects of, the many unfair competitive practices and various weapons of offensive and defensive economic warfare that developed in international trade and finance during the first decade of recovery and expansion that followed World War I.

This warfare became more intensified and bitter in the next decade of the world-wide depression between 1929 and 1939. It was suspended during World War II, only to be revived at its conclusion. There is overwhelming evidence of an early return to the extremely bitter competitive warfare that prevailed in the years between the two

wars, as large non-reimbursable grants-in-aid by the government of the United States to the nations of the world in the years since World War II are sharply reduced or entirely eliminated.

This international economic warfare and its causes are the heritage, not only of World War II and its disrupting effects on the entire world, but also of World War I and its aftermath—the world-wide depression between the two Wars, the full forces of which had not yet run their course before the outbreak of World War II.

It is most important, therefore, that attention be concentrated at this time upon the presently widely divergent problems and conditions prevailing within various countries and in their respective external relations. Certain assumptions now prevailing, not only abroad, but even in the United States, in both governmental and private circles, in regard to international aid, trade and finance, must be thoroughly examined before conclusions are reached and specific recommendations made with respect to the future economic foreign policies of the United States.

Only after an analytical reexamination of both facts and theory, as applied to current economic, political and ideological conditions and issues can the complicated problems of international trade facing the world today be accurately appraised and constructively resolved on a practical, realistic basis rather than a highly emotional one.

As an example of assumptions to be examined, the recent concerted drive on the part of European nations in favor of "trade, not aid", as the continuation of non-reimbursable U. S. grants-in-aid has become doubtful, has raised in the United States a highly emotional attitude in various official and unofficial segments of American society. This attitude is implicitly based upon the assumption that the United States, as the most productive and the greatest creditor nation of the world, if it is to assume its proper responsibilities of leadership in the Western World, must fully accept the economic doctrine of international free trade on a strictly *unilateral* basis. This implicit assumption requires a realistic analysis in light of prevailing world conditions. Present conditions are at sharp variance from those that prevailed toward the end of the 18th century (when the doctrine of free trade was first promulgated by Adam Smith), as well as distinctly different from those that prevailed between 1850 and 1914 (when Great Britain practiced free trade for 65 years).

Much has been said in recent months in the United States and abroad about "freer trade" on the part of the United States. Here again the emotional reaction of various segments of public opinion stems from lack of understanding that the United States today has already reduced its protective tariff wall (under which it attained the world's highest living standards and grew to its present predominant position in world affairs) to a greater degree than any other industrial nation. The United States now stands 7th from the bottom of a list of 45 nations of the world, ranked according to the degree of tariff protection around their respective territories. Already, since 1934, the U. S. tariff structure has on an average been reduced 71 per cent.

For the United States to apply a further over-all or general reduction to what is left of its former tariff structure would be the equivalent in practical effect of full acceptance of the theory of unilateral free trade.

This analysis is divided into two parts. Part I treats the principles of free trade and the requisites for its successful functioning, as well as the actual practice of international trade and finance by the nations of the world. It includes an examination of current foreign trade conditions and problems and concludes with constructive recommendations.

Part II evaluates the peculiar problems of the Electrical Manufacturing Industry and its present position in international trade. It relates them to the foreign economic policy of the United States. It concludes with specific recommendations in respect to national policies designed to promote the over-all public interest and assure the continuation of a strong, healthy and expanding Industry as necessary to the nation's health, welfare and security.

OLIN GLENN SAXON

New Haven, Connecticut
December 1, 1953.

SUMMARY
OF
PART I

THE PRESENT TARIFF STRUCTURE OF THE UNITED STATES

In 1789 Alexander Hamilton, the first Secretary of the Treasury of the United States, induced the first U. S. Congress to adopt, as an essential part of the *domestic* economic policy of the nation, the principles of free trade that has just been promulgated for the first time (in 1776) by Adam Smith, a British economist, in his *Wealth of Nations*.

Hamilton also persuaded Congress that a continent, richly endowed with natural resources, could best be developed by a young and vigorous agricultural nation behind a tariff wall that would protect its undeveloped infant and defense industries, of which there were practically none in the United States at that time.

Congress, therefore, as a fundamental part of its *foreign* economic policy, repudiated Adam Smith's principles of *international* free trade. Congress also adopted as its *tax policy* the financing of the federal government, to the maximum degree possible, by customs duties on imports from abroad.

These policies, except for minor changes, were continued over the years until 1913. Meanwhile, Congress in 1890 and later years had enacted anti-trust legislation, with heavy penalties to enforce free trade and competition on the domestic markets of the United States. The result has been the creation of the largest free trade area in all history.

In 1913, came two major revolutions. Under the newly adopted Sixteenth Amendment to the Constitution, Congress levied the first peace-time tax upon personal and corporate incomes at *graduated* rates. It also sharply reduced tariff rates and added 300 new items to the duty-free list of imports.

Prior to 1913, the federal government had collected by far the larger proportion of all federal revenues from *customs duties*. In fact, in many years 100% of all *tax* revenues had been derived from *customs;* even as late as 1913, 48% were collected from this source. By 1945, however, the federal government was collecting 79% from *income taxes* and in 1952 was still collecting 71% from this source. In 1952 customs duties produced only 1 per cent of federal tax revenues.

Following World War I, due to intense competition in foreign trade, in order to protect new and defense industries, and American agriculture from low-cost foreign labor and currency depreciations of foreign nations, Congress in 1922 raised tariff rates substantially and adopted the principles of *equalization of production costs* of imported articles.

In 1930 Congress raised tariff rates still further by the Smoot-Hawley Tariff Act. In 1934, after a change in administration, Congress adopted a *Reciprocal Trade Program,* which authorized the President, at his discretion, to reduce the Smoot-Hawley rates

by as much as 50%. This authorization has been expanded and continued from time to time.

As a consequence, the tariff structure of the United States, on an average, has been reduced 71% from its 1930 level. Today, the United States stands *seventh* from the bottom of the list of 45 nations in degree of tariff protection. No industrial nation today has as low a tariff structure on the average as the United States. Any further over-all substantial reduction in rates would, in effect, put the United States on a basis of international free trade—without reciprocity from the rest of the world.

Failure Of The Reciprocal Trade Program

From the point of view of the United States, the Reciprocal Trade Program has been a failure. It has not been responsible for the subsequent expansion in international trade nor has it produced reciprocal benefits in exchange for those granted other nations. It has not been effective in reducing trade barriers and discriminatory practices against the United States. Nor did it expedite recovery from the depression in the years between the two World Wars.

In June, 1939 the United States ranked seventeenth among 18 *leading* nations of the world in degree of recovery to their 1929 levels of *industrial* production.

In June, 1939 the United States ranked sixteenth among these nations in respect to *re-employment* in terms of their 1929 levels.

In June, 1939 the *wholesale commodity index* in the United States was 21% below its 1929 level and the United States stood twelfth among these nations in degree of recovery to that level.

In 1938 the *gold value of U. S. export trade* was only 35% of its 1929 level in contrast to 62.6% in the Union of South Africa, 56% in Sweden, 48% in Belgium, 46% in Canada, 40% in Germany and Italy, 38% in the United Kingdom, and an over-all average of 40.6% in the 18 leading countries.

On March 2, 1934, President Roosevelt, urging the adoption by Congress of the Reciprocal Trade Act, said "Important branches of our agriculture, such as cotton, tobacco, hog products, rice, cereal and fruit raising . . . will find expanded opportunities . . . in foreign markets".

However, as a result of a combination of the Act and the U. S. Farm program, agricultural *exports* in (fiscal) 1939, as a percentage of total exports, reached the lowest level in U. S. history. In 1939, total exports were 51% higher than in 1932, but, while non-agricultural exports in 1939 were 90% *higher* than in 1932, agricultural exports had *decreased* 9% (4).

Between (fiscal) 1932 and 1939, U. S. total imports increased only 20.2%. The devaluation of the dollar had partly counter-acted the reduction in tariff rates. *Non-agricultural imports* increased only 20.5%. However, *agricultural imports* that compete with the products of American farms increased 29%, while *non-competitive* agricultural imports increased only 11.8% (4).

Had it not been for the 40% devaluation—also in 1934—of the U. S. dollar, which, had it been *fully* effective, would have been the equivalent of a 70% increase in our *ad valorem* tariff rates, the effects of the Reciprocal Trade tariff reduction program would have been even more adverse to the United States. Since 1934, however, the effects of this devaluation on U. S. rates have been overcome by subsequent devaluations by most nations of the world before and since World War II.

Great Britain's Experience With Unilateral Free Trade

The only nation in world history that ever was able politically to adopt international free trade on a unilateral basis was Great Britain. For 65 years, between 1850 and 1914, Great Britain attained higher national income, higher wages, and higher standards of living for her people than she otherwise could have enjoyed.

This was done, however, at the sacrifice of her domestic agriculture. By importing large quantities of foodstuffs and employing most of her labor force in converting imported raw materials into finished products for re-export, Great Britain was able to expand her population at a greater rate than would otherwise have been possible. She did this only by large surpluses of imports (mostly foodstuffs for her expanding population) over exports by balancing off adverse trade payments with income from foreign investments.

World War I forced Great Britain to sacrifice a substantial proportion of her foreign investments. As a consequence, Great Britain in 1920 reverted to tariff protection, while re-legalizing cartels which permitted competitors to restrict production, fix prices and allocate sales territories on home markets. In 1932, under the Ottawa Agreement, she persuaded the British Empire to erect a tariff wall around itself to discriminate against outside nations. This wall has been continued down to the present. Great Britain, therefore, since 1920, has totally repudiated the principles of free trade, both internally and externally.

Tariff Policies Of Other Nations

Between 1800 and 1913 all nations of Europe followed the policy of protection of new, infant, expanding and defense industries, with customs duties for protection and revenues. Their rates were at times lower than those imposed of the United States, but they did not adopt the free trade principles of Great Britain. These nations at no time have ever practiced free trade on their domestic markets, but have permitted and at times even forced private cartels to restrict domestic production, fix prices and allocate sales allocate sales territories by agreements among competitors.

Japan entered into a treaty with the United States in 1858 by which she agreed to limit her *ad valorem* tariff rates to 5%. This limitation was modified over the years, but Japan did not gain full tariff autonomy until 1911. Thereafter, she adopted relatively high tariffs which have continued down to the present. She also, until the Occupation following World War II, permitted her industries to cartelize.

Results Of Protection

Behind tariff walls, these nations, as well as the United States, developed their infant, defense and expanding industries to a point where many of them by 1913 were fully competitive with Great Britain's. In the meantime, most of them had attained more stable, more diversified and better balanced economies than Great Britain had enjoyed under unilateral free trade.

Without the industrial potential, the skilled labor and the capacity to expand that the United States had developed by 1913, World War I would probably have been lost to Germany.

Effects Of World War I On International Trade

World War I raised the domestic debts of European nations to unprecedented levels. It was financed largely by paper money issues and monetization of national debts. Progressively, their currencies became less and less valuable. At the end of the war, Russia and most southeastern European nations totally repudiated their currencies and all domestic private and governmental debts, as well as other forms of fixed obligations, payable in their worthless currencies.

Repudiations in western Europe were more limited, but ranged up to 85%. Great Britain alone of the Allied Nations was able to redeem its currency and debts in money that retained its pre-war parity with the U. S. dollar and gold.

By 1926, all major nations (except the silver standard nations such as China and Mexico) had returned to the gold standard at parities sharply lower than pre-war. Japan returned in 1929.

The total foreign debts to the U. S. government at the end of the war were $9.5 billion.

Immediately following the war, the debtor nations undertook a campaign for cancellation of these debts on the plea that the United States—which had been converted by World War I from the largest debtor nation on *private* account to the largest creditor nation on governmental account and the second largest on private account—had failed to reduce its tariffs to permit servicing of these debts. Both political parties in the United States rejected this suggestion. This action was followed, however, by negotiations of sharp scale-downs of all war debts by the United States. These reductions ranged from 30% (Great Britain) to 85% (Belgium and Italy).

By 1931 all nations (except Finland) had suspended payments on them. Since then no nation other than Finland has considered them still alive. Total payments (including interest) were only $2.7 billion.

Offensive And Defensive Weapons In International Trade

In the years between the wars, foreign nations developed many new and more effective barriers on international trade than had existed prior to the war. They

included minimum export prices, export duties, and export subsidies of various kinds (direct and indirect), as well as discriminatory subsidies and foreign exchange controls to stimulate exports. These nations also engaged in competitive currency devaluations to leap over tariff barriers.

They likewise developed import embargoes, quotas, and licenses; exchange controls, licenses, and quotas; higher protective tariffs; and domestic subsidies for home-grown products (which could be imported at lower prices). The various quotas, licenses, and controls were administered on a discretionary and discriminatory basis against exports from the United States, Germany and Japan.

In addition, private international cartels in the field of manufactured merchandise and both governmental and intergovernmental commodity control schemes for raw materials were developed. The former attempted to shut out American exporters from third markets. As early as 1919, the United States authorized American export industries to compete, *by coordinated action*, with foreign cartels in order to retain some part of their foreign markets, provided they did not violate the U. S. antitrust laws within the United States.

These cartels restricted production and maintained prices at home above the levels at which they "dumped" large quantities of their products on foreign markets. As early as 1921, Congress was forced to prohibit these "dumping" practices on the U. S. market.

Commodity control schemes, organized by nations that held monopolistic positions in major international staples (such as coffee, tin, rubber, silk, burlap, etc.), the world's annual production of which the United States consumed approximately 70%, operated until 1928-1930, when they broke down under the impact of new areas of production, reduced world consumption, reclaiming processes, and development of synthetic substitutes. Prices of the cartelized commodities then declined much faster and further during the depression years between the two wars than prices of uncontrolled commodities.

In 1931, the international financial crisis—that followed repudiation by Germany of the unpaid balance of the $10 billion in reparations imposed on her by the Allied Nations—precipitated world-wide moratoria, world-wide currency devaluations and other developments which had drastic effects on international trade and forced the world into deep depression, the full effects of which had not run their course by the outbreak of World War II.

As one nation adopted a new offensive weapon to expand its exports, other nations followed suit, while those nations whose markets were threatened, developed new weapons of defense. The result was that each device, offensive or defensive, became the weapon for an increasingly intensive, competitive and retaliatory cut-throat warfare for the constricted trade of the world. Consequently, foreign trade was reduced to lower levels than otherwise would have prevailed.

The U. S. Position On Unfair Practices In Foreign Trade

The United States, prior to 1929, had never engaged in the various monopolistic and restrictive devices, exchange controls, export and import subsidies, commodity control

schemes and the like that have prevailed in international trade since World War I. It had relied solely upon protective tariffs as a defensive weapon against them. Since 1934, however, despite the Reciprocal Trade Program, we have adopted a few of these devices. Wherever used, however, they have not been extensively practiced. They have been applied chiefly to protect and support our domestic agriculture. In 1934, however, we also devalued the dollar for retaliatory and political reasons, when it was not necessary.

The U. S. Farm Program—A Justified Foreign Complaint—One of the major complaints against the United States by foreign nations—in effect a fully justified one—concerns its farm program since 1933. This program actually began in 1929 in a mild form, as a purely temporary emergency measure of price support on the domestic market. This program was drastically expanded during the depression years, suspended during World War II and revived recently in all its aspects after the European nations had regained their pre-war agricultural production levels and U. S. aid in the form of food shipments abroad had ended except in isolated cases. The immediate consequence has been a sharp increase in surplus agricultural stocks, owned by the U. S. Government, which can only be sold on world markets at prices substantially below those that have been prevailing in the United States during and since World War II.

While *foreign* commodity control schemes have been operated primarily for the purpose of obtaining monopoly profits at the expense of the U. S. consumer, as well as to restrict production, reduce exports, and support prices of staple commodities on world markets, the U. S. programs have been aimed primarily at maintaining a prosperous agriculture at home by restriction of production, while disposing of U. S. farm products on foreign markets under larger cash subsidies from the federal government at prices substantially below those in the United States.

By 1937 the United States had lost its foreign markets for most agricultural products, making exports abroad possible only under federal subsidies. Meanwhile, between 1937 and 1939, huge stocks of cotton, wheat, corn, tobacco, etc., had accumulated for government account and were overhanging the domestic and world markets. In fact, in the years, 1938-39, we exported no wheat or cotton, for example, except under an average cash subsidy of 4 cents per pound for cotton and 30 cents per bushel of wheat. These figures represented the degree to which American prices had been artificially held above world levels. Had not World War II developed in 1939, the world would have witnessed a subsidy war among the nations. Canada had already served notice that U. S. subsidies on wheat, if continued, would be matched by her. Australia and Argentina would have been forced to do likewise.

A Threat Of Subsidy Wars—Since 1951 the United States has again resorted to restriction of production and governmental accumulation of huge stocks of agricultural products at prices above world levels. By 1954, it is estimated by government agencies, the United States will have the largest agricultural surplus stocks in its history. Other nations rightly fear that we will undertake to "dump" these stocks under cash subsidies at prices which may demoralize world markets, affect existing trade channels and seriously impair the trading position of competitive nations. This "dumping" process, which we

have outlawed since 1921 when practiced on our own markets by foreign nations, would without doubt, if pursued for long, result in a bitter *subsidy war* among competing nations.

Any solution to the situation, to be politically acceptable, will require the development of a federal stand-by program to stabilize farm prices in case of serious, spiralling deflation. At the same time, it will require a long range subsidy program to assist the many high-cost marginal farmers to readjust their capital and labor to more efficient fields. It is probable that the cost of such a subsidy program, though large, will be considerable less in the long run to the taxpayer than maintenance of the present program. In any case, the suggested policy—in addition to lowering prices to U. S. consumers—has the merit of eventual solution of the problem, while the present program merely perpetuates it.

Effects Of World War II On International Trade And Finance

Internal debts of European nations and Great Britain again rose during World War II to unprecedented levels in terms of constantly depreciating national currencies, all of which had been cut loose from their gold base even prior to the war. The volumes of these national currencies were expanded by monetization of domestic debts and by paper monies. Consequently, they became progressively less and less valuable.

Again, as after World War I, all internal debts, both private and governmental, were repudiated totally in Germany and Japan and in many countries of Southeastern Europe. These repudiations were effected through total destruction of the values of their currencies and affected all fixed obligations, public and private. Other nations devalued at rates that had ranged up to 99%.

External Debt—The outstanding characteristic which differentiates the financing of World War II from that of World War I was the fact that the United States, instead of lending billions of dollars to its Allies both during and after the war—as it did in World War I—adopted the more liberal and realistic policy of outright grants-in-aid which are non-reimbursable.

During and after World War I the United States advanced loans in the sum of $9.5 billion, but made no free grants to its Allies. During World War II, the United States made net grants to its Allies of more than $40 billion and loans of only $715 million. This policy was continued in the post-war years. Between July 1, 1940 and June 30, 1953 the United States made free net grants of $71.9 billion and loans of only $10.7 billion.

The total debts of all foreign governments to the U. S. government arising out of World Wars I and II (including accumulated interest, but with principal payments deducted) for selected years are given below:

	World War I	World War II
	(billions of dollars)	
1922	11.7	...
1929	11.8	...
1939	13.2	...
1952	16.7	10.7

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Due to the more liberal policy of the U. S. government in World War II and to expanding populations in European nations, in 1952 the total and per capita debts of the Allied Nations growing out of World War II are lower than their respective total and per capita debts growing out of World War I. Considering only the *principal* of the debts, they now range between $42 per capita (Italy) and $93 per capita (Great Britain). This is in sharp contrast to the total per capita debt of the people of the United States to their governments (federal, state and local) of $1,840 in 1952.

Of this total, $1,651 constitutes the per capita debt of the American people to the federal government, of which $450 (per capita), represents the $71.9 billions of free grants made by the United States to foreign nations between July 1, 1940 and June 30, 1953.

Conclusions—The conclusions from this review of debts of foreign nations to the United States, the offensive and defensive weapons in international trade and their relation to the problem of free or "freer" trade on the part of the United States can be best summarized by the following statement:

> "The latest foreign slogan—'more trade and less aid'—clearly implies that a radical and general reduction in United States tariffs, if not their total elimination and the acceptance of free trade by the United States at this time and on an unilateral basis, would be beneficial to the American people. Tariff reduction or elimination is necessary, it is contended, as a solution to the monetary, fiscal, and trade relations problems of the other nations of the western world.
>
> "Advocates of a radical revision of United States tariffs or of unilateral adoption by the United States of free trade fail to recognize that tariffs are only a minor factor under present chaotic conditions of world trade and finance and current international monetary instability. Total, unilateral, and immediate elimination of all United States tariffs would accomplish little in our efforts to stabilize international trade relations in the western world or restore its economic balance on a multilateral basis. So long as international trade, financial, and monetary relations are dominated by socialistic theories of managed currencies, compensatory spending, unbalanced budgets, monetization of public debts, competitive currency devaluations, arbitrary and discriminatory exchange controls, inconvertibility of currencies, artificially maintained exchange rates among national currencies, discriminatory export and import quotas, discriminatory export and import duties, governmental fixation of minimum (monopolistic) prices on exports of major international staples, and state-trading, as well as state-financing by nations of the western world, it is utterly unrealistic to discuss tariff reductions by, or unilateral free trade for, the United States as a material factor in correction of current instabilities and imbalances in the western world. . . ."[1]

Especially since 1934, under the Reciprocal Trade Program, repeated efforts have been made to secure elimination by international agreement of the most objectionable of these trade barriers. There has been almost unanimous consent, except from Russia, that they should be abandoned and agreements have been executed to that end, but always with "escape" clauses that permit the continuance of their use under various emergency conditions, real or artificial, that never end.

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[1]Statement by the author of this analysis in *The Economics of Tariffs*—a Forum held by the National Industrial Conference Board, March 13, 1953.

Present International Balance Of Payments Position

To finance World War II, Great Britain, and other nations to a minor degree, were forced to sell substantial portions of their foreign investments in the United States and elsewhere. As a consequence, Great Britain's income particularly, from these sources was sharply reduced and her international trade relations greatly disrupted, due to inability to offset income from these investments against heavy import surpluses, largely foodstuffs necessary to feed her people.

The unfavorable balance of payments position of other nations has not been of the same degree, but nevertheless has been substantial. There are also other major factors in their inability to balance off their dollar obligations from their dollar income from all sources.

Inconvertible Currencies

Chief among these factors has been the inconvertibility since 1931 of the currencies of most nations into gold and, consequently, into one another, except at artificially determined legal rates or at rates established upon illegal or black markets.

Another is the fact that since World War II the European nations and Great Britain, until their bombed out or dismantled plants had been fully restored to e-war capacity, were forced to buy from abroad products that could be obtained to a major degree only from the United States. At the same time, until then, they were not in a position to offer to third or neutral markets the export products which they had supplied in substantial volume to nations of South America, Africa and Asia in the pre-war years. This in turn in post-war years has forced these nations to buy from the United States products which in the pre-war years they had bought elsewhere.

This situation resulted in the destruction of the triangular or multilateral trade and settlements of the earlier pre-war period prior to 1931, whereby, for instance, South American countries sold raw materials primarily to the United States and bought finished products primarily from Europe or Great Britain. The latter nations in turn paid for their imports from the United States by credits established in South America. During this period of multilateral trade all currencies were mutually convertible into gold or one another. Triangular or multilateral trade or settlements in conjunction with convertibility avoided development of so-called "dollar shortages".

The current situation in Europe has resulted in an effort by nations of Western Europe and Great Britain to balance off on a bilateral basis their dollar commitments with the United States by their dollar sales to the United States. This could not be done in the early post-war years. Even if this balancing could be done *now*, with their recovery of industrial production—primarily as a result of U. S. economic aid—it *should not be done* because the natural and pre-war markets of these nations were not in the United States, but in other world areas.

The mere statement of this problem leads to the conclusion that a further reduction in U. S. tariff rates will not solve the problem. The only solution which will reestablish international trade, stabilize it and allow it to expand will be the mutual convertibility of

all national currencies into gold as soon as practicable and, in the meantime, into dollars which since the end of World War I have remained convertible into gold by foreign nations and their central banks.

As the United States reduces and eventually eliminates its economic aid to Europe, if it should open U. S. markets widely to Europe and Great Britain, we may make it impossible for international trade and finance ever to become stabilized on a multilateral basis.

The most effective action would be the repulsion by the United States of all efforts in that direction and an insistence that foreign nations regain their pre-war markets in other world areas, service them as they have in the past, accept the currencies of those areas and encourage them to return to the international gold standard, or dollar convertibility until that is possible. Meantime, the United States can best serve third nations by maximizing its imports of raw materials from them and minimizing its exports to them, encouraging them to buy from their pre-war sources of supply.

International Gold Standard

The best solution to this problem would be the return of all major nations to the international gold standard, in a modified form, if necessary. Only the United States and Switzerland are now on that standard. Conditions are rapidly developing which, if encouraged, can make that result possible within the near future.

By doing so, national currencies would again become mutually exchangeable for one another and triangular and multilateral trade and settlements would be immediately revived. The normal trade channels of the world, developed over the past two centuries, would be reestablished, except in the areas now under the domination of Soviet Russia.

The premium on gold on the free and black markets of the world, which since World War II had existed in terms of depreciating currencies, has now disappeared following the balancing of European budgets, the end of debt monetization, artificial creation of money at rates faster than production growth, and the improvement in the balance of payments positions of most nations, as their exports have expanded at a rapid rate in the last two years.

U. S. Capital Exports

A Major Fallacy—The threat or likelihood of withdrawal of U. S. economic aid has raised throughout Europe and even in the United States a demand for sharp reduction in U. S. tariffs and "freer", if not free trade on the part of the United States under the slogan "trade, not aid". This concerted drive, similar to that following World War I for cancellation of all U. S. loans to foreign nations, is based upon the misconception that a creditor nation must under all circumstances maintain import merchandise balances, if it hopes to secure repayment of its private and governmental loans and investments abroad. This fallacy is based upon Great Britain's pre-war experience when her large import balances were counterbalanced by income from large investments abroad.

The United States is in few respects in a position similar to that of Great Britain. The American economy is the most productive economy in the world and can produce at

competitive prices both agricultural and industrial products for world markets, while maintaining the highest living standards for its own people. Export merchandise balances can be continued for an indeterminable period by a creditor nation, such as the United States. The excess of exports over imports can be counterbalanced by other services, such as shipping, insurance, tourist expenditures, immigrant remittances and the like, though the most important offsetting factor is the continuation of foreign investments by American nationals at a sufficient annual rate to overcome deficits in balance of payments position that may otherwise accrue.

U. S. Capital Markets Are Open To Foreigners—The United States has today the largest reservoir of capital savings of any nation in history available to foreign nationals and their governments on exactly the same basis as capital is available to American enterprises. There is no need of continuation of U. S. government loans or grants abroad as long as foreign nations and their nationals can borrow at the lowest rates of interest ever enjoyed on free markets in history.

All that they need do is to offer the same collateral security, the same mortgage protection, and the same terms as American enterprises offer and establish the same reputation for moral and financial integrity. All that they need do to clear the decks for this action is to assure American investors that their investments for a reasonable length of time will not be nationalized and then only with adequate compensation. The U. S. State Department through diplomatic channels and from other trading posts can expedite such assurances.

Foreign nations and their nationals will hesitate to repudiate private loans that are secured by claims on property within their own jurisdiction, whereas they have had little or no hesitancy in repudiating obligations to the U. S. government that are not secured.

United States Net Private Long-Term Investments Abroad—In addition to debts due the U. S. government, foreign nations or their nationals also have dollar obligations due to U. S. nationals on long-term account. At the same time, foreign nations or their nationals own long-term investments in the United States.

Foreign private debts to, and investments in, the United States and foreign investments by the United States on private account have risen over the years as follows:

	U. S. Long-Term Investments Abroad	Foreign Investments in the U. S.	Net U. S. Private Investments Abroad
		(Billions of dollars)	
1919	6.5	2.4	4.1
1930	15.2	5.7	9.5
1940	11.3	8.1	3.2
1945	13.7	8.0	5.7
1950	19.4	8.5	10.9

It is worthy of note that since 1945, U. S. private investments abroad have expanded 40%, despite chaotic conditions and confiscations in various nations. There is every reason to believe that, if conditions continue to improve and assurances against confiscation are given, these investments could easily expand sufficiently to counterbalance export merchandise surpluses for an indeterminate period.

Export Surpluses Not Incompatible With Creditor Position—In fact, merely through continuation and moderate expansion of foreign investments, the United States can continue to enjoy merchandise export balances for a minimum of one or two decades and even longer under existing capital shortages throughout the rest of the world. This course will not disrupt international balances of payments so long as annual capital exports equalize any annual balance of payments due the United States on all other international accounts. Such a period of grace in the present chaotic political and economic conditions throughout the world will give it additional time in which to attempt to resolve the cleavages, political, ideological and economic, which now divide the world into two hostile camps.

Under these circumstances and particularly in light of the remarkable, even dramatic change in the balance of payments position of Great Britain and most European nations within the last two years—discussed in the Conference Board's Report—it would be a serious mistake for the United States at this time to enact a sharp and overall reduction in its tariff structure.

Conclusions

The United States under these circumstances is fully justified in rejecting the demand that the United States accept on a unilateral basis the doctrine of free or free-er trade. While the United States should be willing at all times to review its tariff structure in the public interest, at this time it should carefully reappraise the entire international situation. In view of the failure of the Reciprocal Trade Program to effect reciprocal benefits to the United States in exchange for the 71% reduction in its over-all tariff rates since 1934 —and in view of the intensification, rather than decrease in the use of both offensive and defensive weapons of unfair competitive practices in international trade by European nations which have benefitted from this program and the U. S. post-war grants-in-aid—in view of all that, the least that the United States can demand is the elimination of discriminations against the U. S. dollar and U. S. exports.

The United States should use its tariff bargaining position—or what is left of it—along with any other trading asset it may have, to encourage the British Empire and other nations to break down all discriminatory tariff and other barriers by which for years they have protected their own and their colonial areas against the products, not only of Japan and Germany in the years between the two wars, but also of the United States.

Until these discriminations are removed against all nations, neither Great Britain nor other nations can come to the United States with clean hands, demanding that we eliminate or sharply reduce our protective tariffs. This is true, not only with regard to the United States, but with regard to Germany and Japan. Both of these countries, as in the past, would look toward countries that are now under the domination of Soviet Russia for large markets for their exports. To what extent they trade behind the Iron Curtain is a matter of great military importance to the Western World and, if in the interest of the defense of the Western World, they agree to limit trade with Russia and its satellites to non-strategic exports, they should be given reasonable opportunities to make up any resulting deficiencies through larger exports to the markets of the Western World.

SUMMARY
OF
PART II

THE IMPORTANCE OF THE ELECTRICAL MANUFACTURING INDUSTRY TO THE U. S. ECONOMY

A Key Industry—All production and distribution, all communications and transportation, as well as the living standards of the American people, are dependent upon the constant expansion of the electric power industry and the Electrical Manufacturing Industry which serves it.

In addition to its paramount importance as a direct producer of war materiel, the nation's entire mobilization base is dependent not only upon power, but also the availability of its emergency and maintenance services.

Growth In Productive Capacity—Total sales of the Industry between 1919-52 increased at an annual average rate 7.4% in contrast to a rate of 3.4% for all manufacing industry. Total sales, as a percentage of Gross National Product, have risen from less than 2% in 1939 to 4% in 1953.

Growth In Domestic Competition—This rapid growth has been accompanied by increasingly active competition within the Industry for the domestic market.

The number of competing manufacturing establishments in the Industry has risen from 1,979 in 1939 to 4,294 in 1951.

The combined share of the Industry's annual sales volume, held by its two largest producing units, has declined from 37.6% of the total in 1936 to 27.6% in 1951.

The Industry's profits *after* taxes, as a percentage of sales, in 1951-52 averaged 4.6%, compared to 4.5% for all manufacturing industry.

Growth In Employment—In 1939 the Industry's total employment was only 4% of the total employment of all manufacturing industry. By 1953 its employment had risen to 1,210,000 or 7% of the total, showing an increase of 210%, compared to only 70% for all manufacturing industry.

The Industry has kept pace fully with all manufacturing industry in respect to average hourly rates of pay, weekly wages and the work-week.

Expansion In Capital Investment—The Industry's extraordinary growth has required more than average increases in capital expenditures for new plants and equipment and in capital investment during and since World War II.

Between 1939 and 1949 capital investment rose from $1.3 to $4.6 billion at a rate twice that for all industry.

Investment *per production* worker in the same period rose 77%, compared with 57% for all industry.

Expansion In Generating Capacity—The total power-generating capacity of the United States in 1952 had grown to nearly 5 times its capacity in 1922.

All U. S. industry has leaned more and more heavily on increased use of power as a means of raising its productivity. In 1952 it used 8.6 kilowatt hours of electric energy per man-hour, compared to only 1.9 hours in 1922.

Competitive Position Of The Industry In Foreign Trade

Expansion In Foreign Trade—In 1920 *exports* of electrical machinery were less than $100 million or about 9% of the Industry's total annual sales volume at that time. *Imports* were only $0.5 million and an insignificant share of the Industry's total volume of annual *domestic* sales.

During and since World War II annual *exports* of the Industry's products have ranged between $400 to $600 million to support the war activity and later to help rehabilitate competitive industries abroad, as well as supply neutral markets that for years had gone unserved. *Imports* during this period remained at low levels, rising from an average of $2 million in 1936-39 to $4 million in 1946-50.

Extraordinary Expansion In Imports Since 1950—In the last 18 months the situation has undergone a rapid change.

In 1952 *total sales* of the U. S. Industry were *nine* times their prewar average and *adjusted imports* were *eight* times their prewar average. In contrast, however, *export sales* were only *six* times their prewar level.

During the first half of 1953, *competitive imports* of electrical products *exceeded* those of the *entire* year 1952 by 20%, while *exports* of the Industry during the first half of 1953 were 46% *below* total exports for the *entire* year 1952.

Total (unadjusted) imports of electrical products have soared from their average level of only $4 million in 1946-50 to $14.6 million in 1951, $17.4 million in 1952 and $41.6 million in 1953 (based on the first half year.) *In other words, total imports of electrical products in 1953 will be more than ten times their 1946-50 average and more than twenty times their 1936-39 average. At the same time exports of electrical products in 1953 will be only 50% above their 1946-50 average and less than seven times their 1935-39 average.*

As foreign competitors re-established and exceeded their prewar production levels, they first took over their own domestic markets, which the U. S. Industry had largely served between 1945 and 1950.

In addition, *with much more efficient* facilities—largely as a consequence of U. S. economic aid—*with substantially lower overall labor costs and lower tax costs than in* United States and, finally, *with various export subsidies* from their governments, foreign competitors since 1950 have been rapidly regaining their prewar markets in countries which do not have electrical manufacturing industries. *These combined advantages are considerably higher today than they were in the prewar years.*

This stronger competitive position of foreign producers will mean sharply reduced exports of electrical products from the United States to neutral markets that since 1939 have been served by the U. S. Industry.

The U. S. Electrical Manufacturing Industry is, therefore, facing not only a certain loss of a substantial part of its *export* markets, but also a serious threat of substantial losses in its *domestic* market (which has already been invaded) to foreign competitors.

U. S. Government Purchases Of Foreign Equipment--Those very items upon which the U. S. economy and the entire industrial mobilization base of the nation are most dependent, such as heavy power equipment, are those which have already been particularly subjected to sharp underselling of U. S. producers by foreign competitors.

The U. S. government, despite the philosophy of the Buy American Act, has increased its purchases of this type of strategic equipment from foreign sources to an alarming degree.

Data, compiled primarily from U. S. government and other public sources, show that during 1950-53 (inclusive) foreign bidders have been awarded 50% of the dollar value of all awards to U. S. manufacturers of heavy power equipment, ordered by the agencies of the federal government and other public users of such equipment (including municipalities, public utility power districts, Rural Electrification Administration power cooperatives, and a small number of private utilities and industrial users).

The dollar amounts of the contracts won by bidding foreign manufacturers rose from 11.3% of the dollar amounts of contracts won by U. S. manufacturers in 1950 to 62.5% for the first 10 months of 1953. As of October 31, 1953, with respect to the dollar value of *pending* bids, which had been opened, but not awarded, the combined low bids of foreign competitors were 83% of the combined low bids of U. S. manufacturers.

Present Protection Is Inadequate—U. S. tariff rates, *sharply reduced* in the years between the two wars, and even the more recent federal legislation, designed to protect Industry's domestic market, are proving inadequate in view of the much stronger competitive position of foreign manufacturers since 1950.

Adequate Protection Vital To National Security—The Industry is one that is vital to the national security, as well as a key industry, basic to the whole economy of the United States.

The Industry, therefore, should be fully protected from any force that might jeopardize its stability and capacity to produce essential equipment and provide efficient and continuous maintenance services, as well as its ability to continue its past valuable contributions to technological research and development in many fields.

CONCLUSIONS AND PROPOSALS FOR EFFECTIVE PROTECTION OF THE U. S. ELECTRICAL MANUFACTURING INDUSTRY

Conclusions

The U. S. Electrical Manufacturing Industry is an industry that is vital to national security—a key industry, basic to the whole U. S. economy.

The Industry provides equipment upon which the transportation, communications, power-generating and utility systems of the country, as well as all other industry, depend.

It maintains, not only the plants, labor and skills to produce this equipment, but extensive and expensive facilities to service it by repair and maintenance.

Maintaining the Industry and its productive and maintenance facilities in a strong position is vital to the economic health, to the general welfare, and to the safety, as well as to the security of the nation.

The Industry, therefore, must be protected at all costs from any force—external or internal—which might jeopardize its stability or its capacity to produce, and provide services to maintain, the equipment for generating, distributing and utilizing electric power, as well as its position on the front line of technological research and development.

The Industry—and the key items which it produces—cannot be allowed to become the subject of trading off for uncertain reciprocal advantages between nations.

The very items upon which our entire economy and our industrial mobilization base are most dependent, such as heavy power equipment, are those which have already been subjected to sharp underselling of American producers by foreign competitors.

It is obvious from the facts presented in the Report of the National Industrial Conference Board (supplemented by the Report of the Stone and Webster Engineering Corporation and the legal analysis of Donovan, Leisure, Newton & Irvine, as well as this economic analysis) that U. S. markets for products of the Industry are already in serious jeopardy—more so by far than following World War I or in the earlier years after World War II.

It is equally obvious from these Reports and this analysis that foreign competition is almost certain to become progressively more intensified and bitter in future years with respect to both U. S. exports and U. S. imports of electrical products.

While *imports* of electrical products into the United States have been only a small percentage of total sales of the Industry, they have expanded since World War II at rates sharply higher than exports. The rate of increase—compared with that for exports—has sharply accelerated in the last two years, as foreign nations have completed rehabilitation of their productive facilities and begun to seek larger markets abroad. In fact, current imports of electrical products are increasing more rapidly than the total demand for such products on the domestic markets of the United States. Therefore, these imports constitute a serious and growing threat to the Industry.

The argument might be made that the small volume of imports of such products should be no cause for great concern to the Industry. These imports, however, can undermine the price levels (resulting from a highly competitive Industry with common cost factors) on which depends its ability to support the research, development and productive strength of its entire organization.

Consequently, the elimination now of all imports of those electrical products that are essential to the national security and the industrial mobilization base of the nation—before they become substantial in volume—will avoid the grave dangers inherent in making the entire U. S. economy dependent on foreign sources.

Action *now* will prevent greater injury abroad later, when the impact of such action on foreign nations would have much more serious consequences to them.

Action *now* is further justified because (as the Report of the Conference Board and the conclusions of this analysis clearly show), the U. S. Electrical Manufacturing Industry is almost certain in the future to suffer extensive losses in its *exports* to foreign markets.

Specific Proposals For The Electrical Manufacturing Industry

The only constructive—the only safe—policy for the United States with respect to the Electrical Manufacturing Industry is the elimination of the importation into the United States of all those custom-built items, having high labor content, such as heavy electrical machinery and equipment which are vital to the U. S. economy and national security.

This objective can be effected in various ways—such as quotas or tariffs.

The philosophy of the Buy-American Act should be broadened and its administration strengthened to prohibit all federal imports of the items to which these restrictions are applicable.

The pressing need for outright elimination in the case of this type of equipment is illustrated by recent developments. The federal government has been making in recent months substantial purchases of heavy machinery and other electrical equipment from foreign sources. This practice has increased to an alarming degree. The foreign equipment, in many instances, has already been ordered for our power systems, atomic energy installations and other governmental projects vital to national defense and security. The United States cannot afford to have these vital systems and essential projects depend upon foreign sources for emergency service and maintenance. It cannot, from a security standpoint, have foreign nationals familiar with vital installations.

This policy of purchasing from abroad impairs both the continued availability of power in emergency periods and the capacity of the electric power equipment industry to provide the necessary planning facilities and skills to assure such availability.

Any attempt to compromise the present danger by continued reliance on "peril point" or "equalization of production costs" or higher tariffs would require constant upward revisions of the rates for the key products of the industry, if the threat from abroad is to be eliminated. The legal analysis prepared by Donovan, Leisure, Newton & Irvine—referred to earlier in this analysis—documents the inadequacies of these provisions.

The acceptance of this policy with respect to heavy machinery and equipment will not foreclose the government from making selective upward or downward adjustments in tariff rates—after adequate analysis and study—on other, less strategic products of the Industry, should such a selective policy be applied generally to other industries.

It should be recognized that the most essential single element in the well-being of the free world and the promotion of its trade is a strong and productive United States of America which has the capability of sustaining and maintaining a large and expanding volume of trade, both domestic and foreign. In the light of the important place held by the electrical industry in the United States, from the standpoint of the investment in its facilities and the number of people depending upon it for a livelihood, any broad tariff policy, applied product by product, should contemplate the establishment of tariff rates at levels which will protect U. S. manufacturers from lower labor costs and the many discriminatory advantages of foreign manufacturers. This would force U. S. manufacturers to maintain a competitive position with respect to foreign producers, comparable with that which now prevails on U. S. markets among efficient and progressive domestic competitors.

Consequently, the most feasible alternative to the United States in its enlightened self-interest and the least damaging to foreign countries would be the elimination of imports of all strategic products of the Industry, with selective adjustments upward or downward for other products of the Industry.

PART I—The Foreign Trade Position of the United States

CHAPTER I

THE PRINCIPLES OF FREE TRADE

Free trade is a simple concept generally accepted as an economic doctrine that in an *ideal* world might function as perfectly in *practice* as it is perfect in *theory*.

Free Trade—A Theoretical Ideal—This theory holds that any nation, group of nations, or the entire world—acting *unilaterally* or in cooperation with other nations—can, by acceptance and enforcement of the principles of free trade, as an essential part of both its *domestic* and *foreign* economic policy, maximize its over-all man-hour productivity, its total and per capita national income and the living standards of its people.

It holds, in other words, that *international* free trade will benefit any individual nation that practices it, whether or not other nations reciprocate. In fact, the theory holds that any nation not practicing free trade cannot at any given time attain the highest living standards for its people, and that the world's standards of living cannot be maximized at any given time without world-wide free trade.

This theory is based on the simple fact that within any particular region, as well as among nations and throughout the world, there always has been and always will be a natural, but grossly uneven distribution of material resources and substantial world-wide variations in climatic conditions, along with gross disparities in population, population densities and human skills. Upon these factors depend the man-hour productivity of labor, the over-all and per capita national production and income, and the wages and living standards of every nation.

Specialization Of Labor And Freedom Of Exchange Of Its Products—Consequently, only by inter-regional and international *specialization* and *division of labor*, as well as *freedom of exchange of its products*, can each region or nation enjoy the highest living standards possible for it at any given time. To accomplish this, each region and each nation must channel its labor, capital and managerial skills to the fullest possible exploitation of those natural resources or other factors in which each has *absolute advantages* (where other nations cannot produce certain products) or various *comparative advantages* (where one nation can produce certain goods or services more cheaply than others).

Elimination Of Industries Having Comparative Disadvantages—If, as a consequence of superior natural resources, acquired skills and techniques or capital equipment, the industries of Nation A have *on the average* only one-half the over-all production costs of Nation B, the wage rates and living standards of Nation A will be twice those of Nation B.

If certain of Nation A's industries are not twice as productive as these same industries in Nation B, though they are, say, 50% more productive than B's, then A, in respect to these particular industries, is at a *comparative disadvantage*. Under these circumstances international free trade principles would require, or in time would result in, the total elimination of these comparatively inefficient industries in A, with the diversion of its capital and labor to its more productive industries. Nation A would thereafter buy

from Nation B the products of these "lost" industries, while both nations, by specializing in those fields in which each has comparative advantages would, in the long run, enjoy higher income and living standards than otherwise.

In the absence of both *internal* and *external* restraints on production and trade, prices of any standardized product in domestic and foreign commerce will tend to differ from nation to nation only by amounts not greater than the transportation costs from one area having advantages in production costs to any other area. Prices (in gold) under world-wide free trade would tend to be the same in all nations, except for transportation costs from nation to nation.

Specialization of labor, however, without free trade, has been practiced throughout history. It was practiced among primitive tribes and between nations of the ancient world, all of which imposed restraints on both internal and external trade.

Specialization of labor is, however, an essential factor in any case to more efficient production, whatever the type of civilization. It is *effective* within any political unit, whether it be socialist, communist, fascist or capitalist. It is *more effective,* when a nation operates under some system of private capitalism, whether monopolistic or competitive. It is *most effective,* when it operates under a system of free, competitive, private capitalism.

Its *full* benefits therefore can only be secured, even within a single political unit, provided there is full and free competition *within its borders,* as well as free trade externally.

Free Trade Requires An Enforcing Political Authority—In order to reap fully the benefits of the economic principles of free trade, there must be a centralized political authority that is willing and able effectively to implement these principles within its own borders by the elimination of all restraints on production and distribution of goods and services and on all movements of capital and labor within its borders.

International free trade, therefore, would require an international political authority, empowered to enforce by sanctions the principles of the doctrine upon all other nations of the world—if world standards of living are to be maximized.

The World Has Never Been An Ideal World—Free traders, however, fail to take into account the practical problems involved in the application of their ideal or theory to the political climate in which the nations of the world have been forced to live. The world has always been politically organized into many national units, each supreme within its own dominion, with deep-rooted traditions and public opinion operating as major influences on public policy. In fact, only one nation in all history has been able, politically, to adopt *unilateral* free trade as part of its economic foreign policy.

While the doctrine of free trade holds that such a nation does increase its own productivity, production and living standards by unilateral action, it does not, however, obtain the maximum benefits of free trade, unless there is reciprocity from the rest of the world. All nations but one (and that one only for 65 years) have always refused to accept the *short-term or long-term consequences*—which necessarily result from elimination of all

industries which have comparative disadvantages in respect to the same industries in other countries.

Even where a nation accepts the principles of free trade *within its own jurisdiction,* it must be able and willing to permit a free flow of capital and labor, as well as enforce full and free competition in production and distribution. Yet, even with full legal freedom of action in a free society of private capitalism that is activated by the profit motive, labor and capital do not automatically flow into areas where they can most effectively serve the public interest. There is always greater mobility of capital than labor, but even capital, necessarily concerned with risks of loss, does not always or promptly flow automatically where the public interest might direct it in order to obtain the full benefits of domestic free trade. Only an absolute and infallible government could assure such flow of either capital or labor. Even under national socialism, whatever its form, there is no assurance that autocratic governmental decisions will be infallible. In any case, the use of force to assure the flow would mean the end of a free society.

Consequently, even where domestic free trade is accepted by a nation, whether or not the full benefits will be attained will depend not only upon the degree of legal enforcement of full competition, but also upon the extent to which necessary readjustments are made, with both capital and labor diverted from relatively inefficient fields of economic activity to more productive endeavors.

Political Considerations And National Traditions Usually Overcome Economic Considerations—Here political considerations inevitably come into play. Public opinion within a nation may not demand full enforcement of competition or insist upon the necessary readjustments that free trade would demand within its own borders. It may even prefer or condone governmental subsidies to inefficient industries—subsidies that alone keep them in operation at the taxpayers' expense—rather than let them go through the slow, costly process of adjusting capital, natural resources and labor to more efficient fields.

For instance, the nations of continental Europe have for centuries operated under a cartel system by which competitors may legally restrict production, fix prices and wages, allocate sales territories by agreement among themselves and engage in other restraints on competition and trade—all of which have been illegal in the United States since 1890. These activities, though legal abroad, deprive those nations that practice them of the full benefits for their own people of free competition and free trade within their own borders.

All foreign nations (except Great Britain) have operated for centuries behind high tariff walls and have been opposed to opening their protected markets to foreign competition by removal of tariffs and other restraints upon imports. Long tradition and public opinion sanction the continuation of these practices. Yet, reciprocity under the doctrine of multilateral free trade would require that other nations have the right to sell to these protected markets, if world living standards are to be maximized.

Likewise, in the United States—the nation that has the largest domestic free trade market ever developed in world history and the nation that enforces competition to an extent unknown elsewhere in the world—public opinion for more than 20 years since

1933 has continued to sanction huge federal subsidies at taxpayers' and consumers' expense to support prices of our domestic farm products at artificial levels and to approve the elimination of competitive processes in our agriculture, even though the United States generally has substantial competitive advantages over most other nations in this field.

In fact, throughout our entire history U. S. public opinion has sanctioned, even demanded, protection for its infant, expanding and defense industries, even though they were for many years operating under substantial comparative *disadvantages* with respect to the same industries in other countries.

The United States Today, If It Had Adopted Free Trade In 1789—Between 1789 and 1913, the United States operated behind a protective tariff wall whose rates were as high as, if not higher, than those in the rest of the world. Yet, today the nation is the most powerful, efficient, productive and prosperous in the world. Under a system of internal competition and free trade, effectively enforced by federal laws since 1890, it has developed a free, private and competitive economy that is as well-balanced and as stable as that of any industrial nation in all history, as well as the largest free trade area in history.

The theoretical free traders will still maintain that the United States would have even higher productivity, higher wages, higher national income and higher living standards, had it in 1789 adopted free trade with the world on a unilateral basis, as it did for its domestic trade. They *may be correct*, but the burden of proof is on them and the weight of all the evidence is against them.

If the United States had operated since 1789 on either a multilateral or a unilateral free trade basis *externally*, we would be a substantially different society than we are today. Structurally the United States would, in all probability, be still primarily a producer and exporter of agricultural products and basic raw materials for the rest of the world. It would still be predominantly an importer of manufactured products, as it was in its earlier years—products that it now produces on an average more efficiently than any foreign nation. It could not have built up its mass-production industrial capacity as rapidly nor have raised industrial production to its present level. It would not have the relatively balanced and stable economy that it now enjoys. It would be more dependent upon foreign nations for its stability and living standards than it now is. Today, it is the most productive industrial nation in the world and its annual over-all production in the present postwar world constitutes 40% of the entire world's over-all production of goods and services, as a United Nations report has recently pointed out. This record has been established under high protective tariff walls and a system of free competition and free trade within its own borders.

Had not the United States in its earlier years, behind high tariff walls, built up its infant and defense industries—that were utterly incapable of competition with foreign producers when they were first developed—their production, capacity of expansion and skilled labor would not have been available in 1914 and in 1939 to the Allied Nations. Both World Wars in all probability would have been won by Germany.

It is also questionable whether our living standards would be as high today, had the United States always been on a free trade basis internationally—with or without reciproc-

ity from other nations. A predominantly agricultural and extractive economy—as we would be today under such conditions—does not lend itself as readily to mass-production techniques as does an industrial economy, with the result that our labor would not be as productive and our national income, wages and living standards not as high as they are today.

British Experience With Unilateral Free Trade—Great Britain is the only nation that has ever indulged in free trade externally on a unilateral basis. Between 1850 and 1914, she operated on a full-fledged free trade basis, *mildly* enforcing competition internally, while *aggressively* practicing *unilateral* free trade externally with the entire world.

Short Term Advantages And Long Term Evils—During this period Britain prospered greatly and enjoyed many benefits that she could not have otherwise earned. Yet today, primarily because of the effects of World Wars I and II on her economy, Great Britain is in a more precarious condition economically than ever in her history.

Under free trade, she developed many large industries which are now threatened with obsolescence by synthetic products or have lost their earlier comparative advantages to competing industries of foreign countries that once were non-competitive, but have now become more efficient than hers behind their high tariffs.

Under free trade, Great Britain sacrificed most of her agricultural production, but by doing so she was able to maintain employment for, as well as feed, a much larger population (through high imports of foodstuffs) than otherwise would have been possible —a population which today would starve, if it were forced to produce its own home-grown food.

It is, therefore, a reasonable assumption that Great Britain, had she been sufficiently foresighted to anticipate the consequences of either World War upon her economy, would not have engaged for such a long period in unilateral free trade which alone made it possible for her to expand her population to its present density. Without free trade, it most likely would have been held down by continuous migration to colonial areas, and her living standards might today be substantially higher than they are. In any case, she might well have avoided her present postwar critical situation, had she not so aggressively followed the doctrine of free unilateral trade for 65 years. She suspended free trade in 1914 and has never returned to it.

The Disadvantages Of Free Trade In A Realistic World—A nation that adopts free trade externally on a unilateral basis may reap substantial benefits for its people in higher income, wages and living standards, but only for such time as its absolute or comparative advantages continue to exist and are permitted by other nations to operate to its benefit. Indefinite continuation of these advantages cannot be assured. All natural resources tend to become exhausted in time. Other nations may discover new mineral deposits that may be exploited at lower costs and prices. New processes may be developed that will destroy previous comparative advantages, as has happened to the British textile, coal, tin and other industries.

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World demand for certain products may decline or shift from time to time and from generation to generation. Protective tariff barriers of other nations may reduce world demand. Technological developments in other nations, as in the case of synthetic nitrates, dyes, rubber, rayon, silk and other artificial fabrics, may make entire industries obsolete, with drastic readjustments necessary in those nations which have failed to develop reasonable diversification of their capital, land and labor and their products behind tariff walls, if necessary.

Chile (in copper and nitrates), Brazil (in coffee), Bolivia (in tin), Cuba (in sugar), Malaya (in rubber), India (in burlap), the United States (in cotton), and Japan (in silk) are but examples of the consequences of over-specialization in particular products in which they once had outstanding *comparative* advantages, if not *absolute* advantages. These nations over a period of years have found an inadequate demand on world markets to absorb the full production necessary to keep their land, capital, and labor forces adequately employed in face of competition from other nations—often based on synthetic products, the development of which was sharply stimulated by monopolistic pricing of the products in which these nations had specialized.

Excess populations which previously had been dependent upon comparative advantages that no longer exist cannot migrate freely or be shifted at will from one nation to another. The days of unlimited immigration have long since vanished throughout the world to be replaced by highly restrictive quotas.

Absorption of capital and labor, diverted from inefficient or obsolete industries that are destroyed by removal of tariff protection or other economic forces, cannot be accomplished, except with great difficulty and over relatively long periods of time, as Great Britain is now discovering.

Wars, as well as various dynamic forces of economics and technology in times of protracted peace, can effect drastic, even revolutionary changes in former world trade channels and former world supply and demand relationships for the products of nations that, in reliance upon the continuation of existing conditions, have concentrated upon specialization of labor and international exchange of products. Such nations have failed to safeguard their economic stability by proper diversification. They have failed to attain well-balanced and relatively stable economies.

It should be clear, therefore, that there is no assurance that any existing *status quo* will for long remain unchanged in a dynamic world—a world that is also subject periodically to the disruptions of war. For the sake of greater stability and greater balance any nation under existing world conditions is fully justified in a political determination to progress more slowly in attaining the highest possible living standards under the theoretical, but highly uncertain and unproven, benefits of *unilateral* international free trade.

Nations will prefer to enjoy a more balanced and stable economy, even though it is not the most efficient and the most prosperous society that theoretical idealists claim could be enjoyed under the principles of unilateral free trade.

Conditions Essential To International Free Trade—The experience of all nations over the centuries indicates that, in order to reap the full benefits of the doctrine of international free trade, certain conditions would be essential. They are:

An enforcing national political authority to insure full and free competition within each nation so that all factors of production—capital, natural resources and labor—are allocated on free markets by the profit motive to those fields in which they will be most productive.

An international political authority, a world government or a United Nations, with power to enforce by sanctions full and free competition within the limits of its political authority and to compel each nation to refrain from the erection of any barriers against the free flow of capital, labor, goods and services in order to insure full operation of the principles of international *division* and *specialization* of labor and *free exchange* of its products under the profit and loss system of a private capitalistic economy.

A common world currency or national currencies mutually convertible, presumably into gold, with an international authority empowered to assure the maintenance of national policies that will permit determination and stabilization of the true values of all currencies on free markets in order to permit multilateral trade and multilateral balancing of payments.

Multilateral commerce, with all bilateral barter, trade and payments agreements outlawed.

Freedom of international loans and investments, with protection of all foreign investments from confiscation without full compensation.

Elimination of State-production, State-financing and State-trading, which, as practiced by totalitarian (socialist, communist or fascist) societies, as well as all monopolies (except those chartered and regulated by governments as essential and true public utilities) are incompatible with the ideals of international free trade.

The nearest approach to world-wide free trade came under the Roman Empire about 2,000 years ago, when for about two centuries of its domination—by force of conquest—over most of the ancient Western World, comparatively free trade was enforced throughout the Empire under Roman legions, Roman law, and Roman currency. With the collapse of the Empire early in the fifth century A. D., its political authority was atomized into several thousand small political units. Western civilization collapsed into a political anarchy and an economic chaos (known as feudalism) that endured for 1,000 years throughout the Dark and Middle Ages. Only the rise of the present national states of Europe—that later colonized the American, African and Australian continents—put an end to feudalism.

Conclusion—This statement of the necessary conditions, under which international trade could function satisfactorily and attain its full benefits on a multilateral basis, shows the utter impracticality of attainment of that ideal in the foreseeable future. Admittedly, therefore, there is no prospect today of world-wide free trade.

Most nations today do not even enforce free competition within their own borders to secure the maximum benefits of internal free trade.

One-half of the world is presently organized under totalitarian regimes.

There is no assurance that, if the Western World adopted free trade, political and military considerations would not continue to dominate totalitarian nations in the allocation of their resources for the purpose of conquest of other nations, a condition that could not develop in a free competitive and capitalistic society.

There is no assurance that totalitarian powers would not use the access to the markets of free countries to weaken Western nations by wrecking their international trade and industries dependent upon it.

For the United States to adopt unilateral free trade, or anything closely approaching it, at this juncture in world affairs would be foolhardy. It is essential that the United States remain strong both economically and militarily at home and, at the same time, encourage all nations of the Western World by all means, short of continuing subsidies, to increase their productivity and expand their internal production at lower costs and prices. This requires the removal of restraints on internal trade of the various nations and continents and a gradual reduction of barriers to international trade.

The United States today stands 7th from the bottom of a list of 45 nations of the world in degree of tariff protection.[1]

Already the U. S. tariff rates have been reduced (on an average) 71% from their levels in 1934.[1] The United States today is being pressed by foreign countries to adopt the principles of free trade strictly on a unilateral basis. A substantial over-all reduction at this time would, in effect, be the equivalent of the adoption of external free trade on a unilateral basis.

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[1]The American Tariff League.

CHAPTER II

THE PRACTICE OF INTERNATIONAL TRADE (1789-1939)

In 1776 Adam Smith, the British economist, published his **Wealth of Nations,** in which for the first time the principles of free trade in domestic and international commerce were developed. This document exposed the fallacies of the system of *Mercantilism* that had dominated domestic and international trade in Europe and Great Britain for several centuries after the end of *Feudalism.*

The *Mercantile* system was founded upon *Guild* domination of national economies. Trade and craft guilds fixed prices, allocated sales territories among competitors and restricted production on domestic markets, as well as enforced trade barriers against the products of other nations and areas. *Mercantilism* also held that a nation could benefit from foreign trade only by maintaining a surplus balance of its exports over its imports and by accepting payment of that surplus only in gold or silver bullion, the monetary metals of the period.

U. S. Foreign Trade Policy And Its Effects On The U. S. Economy (1789-1913)

The Wealth of Nations had great influence upon the Convention that framed the Constitution of the United States in 1787. Not only had Adam Smith been a friend of Benjamin Franklin, but many of the members of that Convention were fully familiar with his doctrines of free trade. Many of his principles were implicitly incorporated within our federal and state constitutions to establish a system of *private, free* and *competitive capitalism* in the United States.

The U. S. Constitution, while authorizing duties on imports from abroad, prohibits duties upon exports from the United States. It established, however, a nation-and-continent-wide free trade area by prohibiting tariffs and other trade barriers among the individual states.

Protection Under Customs Duties Of Infant And Defense Industries—A Traditional U. S. Policy—Alexander Hamilton, the first U. S. Secretary of the Treasury, persuaded the first U. S. Congress to accept Adam Smith's doctrines of free trade for our *domestic economy,* but to repudiate them with respect to *international trade.* He held that a young and strictly agricultural nation—scattered along the Atlantic seaboard with the entire and largely unexplored North American Continent behind it for exploitation—would have almost unlimited possibilities of development and expansion of industrial, mineral and agricultural production, as well as creation of a continental free trade area.

At the same time, Hamilton contended that the United States could attain a better-balanced, relatively more stable and more self-sustaining economy—with high standards of living for its people, as well as the maximum of national security—*only* by encouragement of, and protection to, new *infant* and *defense* industries in the United States. Unless

this was done, the development of the continent would be lop-sided and the nation would continue to be primarily an agricultural or extractive nation, producing mainly raw materials and foodstuffs for Europe and Great Britain and exchanging them for manufactured products from abroad which were then produced in the United States in only nominal quantities, if at all.

Congress accepted Hamilton's proposals in their entirety and enacted a tariff structure for the United States with high protective rates which, with relatively minor changes in policy, prevailed until 1913. This structure had two objectives: first, the financing of the costs of the U. S. government primarily by duties levied on imports from abroad for *revenue* purposes and, second, *protection* of our industrial potential to permit and encourage development within the country of all kinds of industries.

Under this foreign economic policy, the United States flourished. The policy was continued, as the nation extended its borders from the Atlantic to the Pacific and from the Canadian border to the Gulf, developing and expanding its infant industries and maintaining the largest free trade area ever enjoyed by any nation in world history.

Anti-Trust Legislation—The United States inherited from Great Britain the common law of competition and illegality of practices in restraint of commerce. This development in Great Britain had followed the gradual outlawing of the monopolistic guilds and their restrictive practices.

In 1890 and later years, federal anti-trust laws, strengthening the common law of competition and imposing for the first time heavy civil and criminal penalties for their violation, were enacted to establish and maintain in the United States, to a degree never practiced elsewhere in the world, the principles of free trade within a nation. Great Britain at no time in her history has enforced the principles of competition in her domestic economy or her Empire to the degree that they have been enforced in the United States. Europe, on the other hand, has never outlawed the old monopolistic guilds of the medieval period, but has permitted them to survive in the form of the modern cartel.

Tariffs For Revenue And For Protection—In the 124 years between 1789 and 1913, with the federal Constitution prohibiting the levying of tariffs on exports, our *tariff* policies were deliberately designed to protect our industries, as well as our farmers and workers, from foreign competition.

At the same time, our *tax* policies were designed to raise federal revenues, as nearly as possible, from duties on imports from abroad. Between 1790 and 1860 duties in some years produced virtually *all* federal revenues. For many years they produced 100% of all federal *tax* revenues. Even as late as 1849 to 1862 (inclusive) they yielded 100% of all federal tax collections. As late as 1890, they produced 60%, and in 1900 more than 44%, while even in 1913 they produced 48% of all tax revenues.

Between 1860 and 1913 revenue collections from duties never exceeded $5.24 per capita nor fell below $1.22 per capita. In fact, for the entire period 1820-1934 (inclusive) they averaged only $2.75 per capita.

Expansion Of The United States Under Domestic Free Trade And Protection In Foreign Trade—Under Hamilton's policies, the United States in many respects was to Europe what would today be considered an "undeveloped nation"—primarily an exporter of raw materials and a debtor nation (on private account).

During these years the United States was the beneficiary of substantial investments and loans from abroad on private account. Between 1790 and 1913 the United States, as a substantial debtor nation on private account and a relatively minor factor in international trade throughout the entire period, had export balances in 51 years and import balances in 73 years. Throughout this period, the United States was importing capital for development and expansion. At the end of the period, the United States was a debtor nation on private account in the sum of $3.5 billion.

In the meantime, with the development of mechanical (steam) power in the early half of the 19th century, U. S. industry began to expand more rapidly. After a setback during the Civil War, a tremendous impetus was given to industrial development and expansion by the substitution of electrical for steam power in the second half of the century. This growth was accentuated by the introduction for the first time in industrial history of mass-production techniques, standardization of products and other devices to expand production, reduce unit labor costs, and increase the productivity of labor.

By 1913, the United States had developed a substantial industrial position, with many of its industries fully competitive with those of Europe and Great Britain which had had decided over-all production cost advantages over the United States throughout the 19th century. Without the U. S. industrial potential, available to the Allies in World War I, that war most likely would have been lost to Germany.

A Tax Revolution In 1913—In 1913 came two revolutionary changes in the United States. The first was the implementation of the 16th Amendment which became operative in that year. Under this amendment the federal government was empowered for the first time (except in war) to levy direct taxes on incomes, both personal and corporate, at graduated rates. The first levy on corporate incomes was a flat rate of 1%, while the rate on individual incomes was graduated from 1% to 6%. Over the years since then, combined income tax collections from both individual and corporate incomes have risen from 10.6% of total federal tax collections in 1913 to 79.4% in 1945. Since then, they have fallen back to 73.2% in 1951 and 71% in 1952. Meanwhile customs receipts, as a percentage of total federal tax collections, have declined sharply from 48.1% of the total in 1913 to less than 0.9% in 1949 and approximately 1% in 1952.

The table below shows the effect of this tax revolution upon the U. S. tax structure.

Changes in Federal Tax Structure
(1860-1951)

	1860	1900	1913	1920	1930	1939	1945	1949	1951
Total Tax Collections (Billions)	$.053(a)	.528(b)	.663(b)	5.7	3.6	5.5	44.2	40.8	51.2
Per Cent Produced By:									
All Taxes	100	100	100	100	100	100	100	100	100
Customs	100	44.1	48.1	5.6	16.2	5.8	0.8	0.9	1.2
Excise Taxes(c)	None	45.9	46.3	12.3	12.8	28.6	10.1	14.1	13.3
Gift and Estate Taxes	None	None	None	1.8	1.8	6.6	1.5	2.0	1.4
Individual Income Tax	None	None	None	69.1	31.6	18.8	43.1	44.2	45.0
Corporate Income Tax	None	None	5.3	(d)	34.8	20.5	(e)	(e)	(e)
Corporate Excess Profits Tax	None	None	None	(d)	None	0.6	(e)	(e)	(e)
Total Corporate Income Tax	None	None	5.3	(d)	34.8	21.1	36.3	28.3	28.2
Miscellaneous Taxes	None	10.0	0.3	11.2	2.8	19.1	8.2	10.5	10.9

(a) Other revenues were from sales of federal lands, postal receipts, and other minor sources.
(b) Total receipts not allocated among all sources; chiefly from excise taxes and customs.
(c) Includes manufacturers' and retailers' excises and liquor and tobacco taxes.
(d) Corporate and individual income tax receipts are combined. The Treasury did not keep separate accounts in 1920.
(e) Breakdown not available.

Source: Derived from Annual Reports of Secretary of Treasury and Department of Commerce or computed therefrom. (Data are for fiscal years.)

A Tariff Revolution In 1913—The second revolutionary development in 1913 was a sharp reduction in tariffs, ranging from 29% to 41%, while three hundred new items were placed on the free list. This was the first drastic change in the philosophy of the federal government with respect to tariffs. President Wilson effected this change by a plea to Congress that tariffs be levied primarily for revenue purposes—and not for the benefit of industries, workers and farmers who no longer needed protection.

On the eve of World War I, the United States was still predominantly an agricultural nation and her exports were also primarily agricultural. At the same time the United States had become the largest debtor nation on private account and had not yet engaged in making governmental loans to foreign nations.

Great Britain Under Unilateral Free Trade (1850-1914)

When Adam Smith's doctrine of free trade was first promulgated in 1789, Great Britain failed to apply that doctrine to her international trade, though she had already to a major degree eliminated the cartel (guild) monopolostic restrictions on her internal economy in favor of free domestic trade. By the middle of the 19th century, however, Great Britain found herself in a unique position that was enjoyed by no other nation at that time or ever before.

Britain's Unique Advantages In 1850—The development of mechanical power (steam) for industrial production that resulted in the Industrial Revolution came just at the time when Great Britain's industries had great production cost advantages over all other nations. Her industries were prompt to capitalize, not only upon *steam* power, but later upon *electric* power which gave her still further advantages over the rest of the world.

After Britain's defeat of Napoleon, she also had the largest commercial sailing fleet among the nations. She became the first nation of the world to adopt the gold standard. Other national currencies had been convertible into pounds sterling on a gold basis since 1816. Throughout the 19th century Great Britain had a rapidly growing population which could not be adequately fed by her own domestic agriculture. During the first half of that century there was constant public pressure for the removal of high tariffs on British imports of foodstuffs. By the middle of the century this public pressure became irresistible politically. In addition, Britain had the most widespread and efficient banking facilities for financing international trade and investments throughout the world. She also had the largest reservoir of capital savings then available for foreign investment. Her situation, in brief, was such that there was every immediate inducement for her to accept and practice Adam Smith's principles of international free trade *for herself*, even though she could not induce other nations or the rest of her Empire to reciprocate. At this time (1850) it appeared that there was every *advantage* and no possible *disadvantage* that could accrue to Great Britain from the adoption of this policy, except the loss of a substantial part of her agricultural production and a shift of a larger portion of farm labor to industrial production.

With this conviction, Great Britain accepted and rigorously applied the principles of unilateral international free trade for a period of approximately 65 years—until it was disrupted by World War I. Under that system, Great Britain prospered extensively. Her living standards, industrial production, industrial exports, imports of foodstuffs, foreign investments, man-hour productivity, national income and population expanded rapidly—faster than in most countries and faster than then would otherwise have been possible.

In fact, she was able to extract the maximum benefits possible at that time from her natural resources and her capital, as well as her labor force, which was rapidly expanding and heavily concentrated in her growing industries to serve her increasing exports. She maintained generally over the years balances of imports over her exports, but was able to pay for these import surpluses with the income and profits derived from her foreign investments. Otherwise, she could not have supported the import balances necessary to feed her population which continued to increase steadily throughout the period. Without this ability to offset import surpluses, the steady increase in her population never would have been possible. In all probability, there would have been substantial migration from year to year from the British Isles to her colonial areas or the rest of the world.

Unfavorable Consequences To Britain From Free Trade—As was inevitable under the doctrine of free trade, British agriculture, which was at a decided over-all production cost disadvantage with respect to large areas of the world, showed a sharp decline. In fact, many British statesmen pointed out the great danger that Great Britain was fac-

ing, as a consequence of the weakening of her agriculture. War or other catastrophe might destroy or sharply impair her income from foreign investments and make it impossible to continue to pay for essential food imports. No crisis of this sort, however, developed until World War I.

Great Britain Returns To Protection—In effect, Great Britain acknowledged that unilateral free trade—in the kind of political world in which we live—had proved contrary to her long-run interest when, following World War I, she not only reverted to protective tariffs, but re-legalized cartels in order to restrain competition on her domestic market. In addition, in 1930 she negotiated with the members of her Empire the Ottawa Agreement under which tariff walls were established around her entire Empire, with *preferential* rates that still prevail, to discriminate against foreign competition in favor of Empire products. By doing so, she hoped to continue to sustain her over-large population on Empire trade primarily.

International Trade Policy Of Other Nations (1800-1914)

Meanwhile, other major nations of the world, including Japan, followed the U. S. policy of levying tariffs on imports both for *revenue* and *protection* of infant, expanding and defense industries.

European Tariff Policy—Friedrich List, a German who had migrated to the United States in the early part of the 19th century and later returned to Germany, became the exponent of *protectionism* on the European continent, as Hamilton had been in the United States. Largely as a result of his theories of trade, Germany, France and other nations on the European continent took an intermediate position between the free trade policy of Great Britain and the protection policy of the United States.

This course was due largely to the fact that European economies were industrially more advanced and more efficient on the average than the economy of the United States. Their agricultures also were more intensively developed than in the United States, but more able to support their respective populations than in Great Britain. The densities of their respective populations were substantially less than the population density in Great Britain, but greater than that of the United States. Consequently, their need for agricultural imports or industrial exports was relatively less than in Great Britain. European nations also were potential creditor nations in contrast to the debtor position of the United States. They, therefore, adopted *lower* protective tariff rates than those prevailing in the United States, but did not accept Great Britain's doctrine of free trade.

As pointed out earlier, there was another fundamental difference between both the British and the American economies and those of Europe. Great Britain and the United States had established a substantial degree of internal free trade within their respective jurisdictions, while the nations of continental Europe and their colonies still retained the monopolistic cartel system which permitted restriction of production and fixing of prices and wages and allocation of sales territory by competitors—the very antithesis of free trade—on their domestic markets.

Japanese Tariff Policy—Japan, which had a greater population density than the European countries and the United States, did not become a factor in international trade until 1858. A treaty between the United States and Japan in that year limited her duties on imports from the western world to 5% *ad valorem*—a rate that was modified by agreement from time to time over the next half century. Japan did not attain full tariff autonomy until 1911. Thereafter, she adopted higher protective tariff rates for her growing industries and has maintained them down to the present time.

As a consequence of these protective tariff walls, the major European nations and Japan developed and extended their industrial potentials and encouraged new and defense industries that could not otherwise have developed. They attained, through the exploitation of mechanical power and mass-production techniques, varying degrees of increasing man-hour productivity. They also achieved relatively stable, relatively balanced and relatively self-sustaining economies to a much greater degree than Great Britain attained under her free trade policy or they themselves would have enjoyed under the British system.

The International Gold Standard And Trade Policy—Most of the nations of the world in the decade, 1870-1880, adopted the gold standard which Great Britain had formalized many years earlier, with the consequence that the currencies of the major nations of the Western World were convertible into gold and among themselves on a multilateral basis between 1875 and 1914, except for short periods during wars. This multilateral convertibility facilitated the expansion of international trade at a more rapid rate than ever before in history, despite the protective tariff barriers around all nations, except Great Britain. Multiple convertibility expands international trade by making barter transactions unnecessary. It substitutes multilateral trade and multilateral settlements of balances of payments for bilateral trade and bilateral settlements.

The gold standard, when adopted and practiced by the major nations of the world, acts as a substitute for a world-wide currency.

Effects Of World War I On International Trade and Finance (1914-1939)

Adam Smith's theory of international free trade was promulgated before the development of mechanical power and at a time when wars, though frequent, did not have the disastrous effects on industrial and agricultural production, industrial machinery and equipment and the monetary, tax, and debt policies and structures of nations, as did World War I and World War II.

Repudiations Of Unprecedented Internal Debts—After all previous wars, there had been no levying of heavy reparations upon defeated nations to be paid over a decade or more, as occurred after World War I with respect to Germany and Austria. Reparations were confined to indemnities that were collected promptly in bullion or in commodities. Earlier wars had been much less expensive and had sharply less disruptive effects on national finances and on both national and international debt structures. The outstanding differences between World War I and former wars were its unprecedented costs, unpre-

cedented increases in internal and external debts of all nations involved in the war, and the unusual devices used to finance the warring nations both during and after the war.

Within each European nation—and in Great Britain as well—domestic national debts soared to levels that in most cases were utterly impossible of redemption in honest monies, rising in many countries by as much as a thousandfold or more. These internal debts, both governmental and private, were totally repudiated by Russia, Germany, Austria and most of the nations of southeastern Europe. In western Europe (except Great Britain) the repudiation was more limited, ranging up to 85%. These repudiations were effected by the printing of unconvertible paper monies in such volume that the currencies of these nations became progressively less valuable until they were reestablished on a gold basis after total or partial repudiation. This process of repudiation of domestic debts and devaluation of currencies in terms of gold was completed by 1925.

In Great Britain, however, while the internal debt rose several hundred per cent, the internal debt structure did not rise as high as on the Continent. Great Britain did not repudiate its internal debt, but redeemed it in full in honest money. She returned in 1925 to a full gold standard without devaluation. At this time most of the other major nations of the world (excluding the silver nations, China, Mexico, etc.) returned to the gold standard. (Japan returned in 1929.) By 1926, practically the entire world, with the exceptions noted, were back on the gold standard, with their currencies sharply devalued in terms of their pre-war parities, except for the United States, Great Britain and several neutral nations.

Repudiations Or Drastic Scale-Down In Foreign Debts—While nations can repudiate in whole or in part the value of their national currencies and all fixed obligations payable therein (including both private and government debt and other forms of fixed investments), they cannot repudiate external debts (which are usually payable in gold or currencies of other nations) without unfavorable consequences to themselves from abroad.

World War I also for the first time in history developed a huge and unprecedented *external* debt structure. Most of the Allied Nations borrowed heavily from the United States in dollars. Most of the European nations borrowed additional sums from Great Britain in pounds sterling. Russia borrowed from the United States, Great Britain and other European nations. These debts could be serviced only through shipments of commodities and services or gold bullion, unless they were extended from time to time. These debts imposed upon post-war international trade very much heavier burdens than had ever been experienced in world history.

Following World War I, Russia repudiated all her external debts and since then has never reacknowledged them. This precedent was followed by most of the eastern European nations. Germany and Austria were not allowed by the Treaty of Peace to repudiate and, in addition, Germany under the Treaty was assessed reparations in the impossible sum of $100 billion. This figure was necessarily reduced to $30 billion in 1926 and later to $10 billion. In all, German reparation payments, including commodities, amounted to almost $9 billion between 1924 and 1936. In this same period, private investments and loans in Germany from abroad, largely from U. S. nationals, amounted to almost $6 billion.

Immediately following World War I, an intensive campaign was begun by foreign nations for the cancellation of their debts to the U. S. government. Great Britain offered to cancel her debts to the Allied Nations to the same degree that the United States would reduce or cancel debts she owed to the United States. Public opinion in the United States was hostile to these suggestions. Both Republican and Democratic platforms throughout the years following World War I carried platform planks against cancellation of foreign loans.

Drastic Scale-Down By United States—However, between 1922 and 1926 the United States did drastically reduce the outstanding debts (including accumulated interest) of these Allied Nations in varying degrees. The reduction in some countries ran as high as 85% (Italy and Belgium), and ranged down from 80% (France) to 30% in the case of Great Britain. After these reductions from a total aggregate amount of $9.5 billion (exclusive of accumulated interest) these nations continued to service their debts to the United States until 1931, after which they were in default. Since then no nation, except Finland, has continued to honor these debts. Since World War II, Great Britain, in order to qualify under U. S. law for further U. S. loans, made certain small token payments on her defaulted World War I debt. In all, only $2.7 billion have been repaid (including interest) on the original sum of those debts—$9.5 billion. Realistically, however, all these obligations have long since been considered as dead, as is true of World War I reparations levied on Germany and Austria.

Reparations Default And International Financial Crisis—In 1931 it was obvious that Germany, which had made sincere efforts to settle its annual commitments under reduced reparations ($10 billion), could not continue payment, unless discriminatory tariff and other barriers against her exports were reduced. She served notice that she would be compelled to default, unless an extension was granted to her and corrective action with respect to trade barriers taken by other nations. President Hoover, in an effort to prevent this default, offered a moratorium to all foreign nations on debts due the United States in exchange for similar moratoria by European nations with respect to German and Austrian reparations. France alone refused to agree. As a consequence, Germany defaulted on reparation account on July 1, 1931, suspended all payments on international account, froze several billions of dollars of foreign bank accounts and investments within Germany and started a wave of similar actions which spread by chain reaction throughout Europe, South America and other nations that were tied by trade and financial relations to various European nations.

A Second Wave Of Currency Devaluations—Great Britain tried to avoid suspension of foreign obligations and to give relief to other nations through short-term loans in order to prevent the further spread of suspensions, but by the middle of September, 1931, she herself ended the convertibility of her currency into gold and suspended payments on her debts to the U. S. government, though she did not otherwise suspend her external obligations.

As a consequence of these forces, the currencies of most nations of the world (with the exception of the United States, France, Switzerland, Belgium and Holland) fell

sharply and were devalued in terms of gold and the U. S. dollar. For most of these nations, these devaluations were the second round since 1919. All these developments came after the stock market deflation of 1929-31 in Great Britain and the United States, which had reached a reasonable degree of stabilization before the international financial crisis broke.

The following is an illustration of the effect of currency depreciations throughout the world on prices of commodities that normally flow in international trade. A British exporter in August, 1931 sold overcoats in New York for $100 each and converted the dollars into, say, 20 pounds sterling. After suspension of gold by Great Britain and the decline of the pound sterling by 40% below its parity with gold and the U. S. dollar in September, 1931, he then reduced his price in New York to $60. With the $60 he then bought the same number of pounds sterling (20) that previously had cost him $100. In other words, with the currencies of the world falling to a level approximately 40% below their parities in gold and dollars, most international staples could be sold on the U. S. and other gold markets of the world at discounts ranging up to 40% below prices of these commodities before the suspensions. As one commodity fell in price, it dragged down with it the prices of similar or related commodities and industrial products. This resulted in a spiral of price declines. This development was a primary cause of the crash of the wholesale commodity index in the United States in 1932 to a level that was about 25% below that of 1930 and 59% below its peak level in 1920.

U. S. Foreign Trade Policy Between The Two Wars

The United States was converted by World War I from the largest debtor nation on *private* account to the largest creditor nation of the world on *governmental* accounts and the second largest creditor nation on *private* account. She was also converted from a predominantly agricultural to a predominantly industrial nation. At the end of the war her industrial productive capacity was superior to that of any other nation and her industrial productivity on an average was substantially greater than in other nations. This advantage continued to increase in the years following World War I, despite the subsequent recovery and expansion of industrial production abroad. World War I also changed the exports of the United States from predominantly agricultural to predominantly industrial.

The United States As A Creditor Nation—As a debtor nation on private account before the War, the United States had been permitted by its creditors to service its debts and pay their principal amounts through shipments of goods and services and gold and silver bullion. When the nation was converted to a creditor position on both private and governmental account, the cry was immediately raised throughout Europe and in various quarters in the United States that it was necessary for it to lower its tariff barriers and accept import surpluses, as the *only means* by which foreign debts to the U. S. government and its nationals could be paid.

This misconception was widespread, not only during the period between the two World Wars. It is now broadly accepted and is presently being publicized widely throughout the United States.

A creditor nation is not dependent only upon a balance of imports, as a means of securing payment of its foreign loans and investments. They may be settled by shipments of gold bullion, as well as goods and services. If there is not adequate gold from annual production, there is a danger that gold will be drained from the currency reserves of other nations and thereby prevent their maintaining the gold standard and multilateral convertibility of their currencies. Nevertheless, large shipments of gold without this disrupting effect are possible from time to time.

Capital Exports—The important fact is that a creditor nation can for an indefinite period of time, which may be a decade or more, continue to maintain substantial export surpluses of merchandise, especially if *it continues in that period to export capital in sufficient volume to maintain an overall balance of payments.*

The time will eventually come, of course, when the annual payments of profits and interest on such expanding foreign investments, including repayment of principal amounts from time to time, will become sufficiently large as again to establish a situation where, if the creditor nation expects to receive final repayment of its foreign investments, it must be willing to accept surpluses of merchandise imports.

The United States has been bitterly criticized by the debtor nation governments of Europe and their private borrowers from the United States, as well as by various theoretical economists, statesmen, politicians and many others in the United States because it refused to accept import surpluses immediately following World War I or to adopt them as a policy in the years between the two wars. They all totally ignored the possibilities and advantages to world trade and finance derived from maintenance of export surpluses by a creditor nation that continues to export capital for foreign investment in sufficient volume to off-set the payments due from abroad on all other accounts.

Selectively Higher U. S. Tariff Rates (1919-1929)—Congress in 1922 raised tariff rates to grant a greater degree of protection to certain U. S. industries, particularly new and defense industries, which would not have been able to develop, expand or continue to exist in the post-war years, had they been subjected to the intense competition from abroad which prevailed following World War I, due to lower over-all production costs and lower tax burdens, as well as the various unfair competitive practices and other offensive weapons of international trade and finance which developed in the years between the two wars and had never been experienced before in world history. The chemical industry is an outstanding example of one which grew only through the protection of tariffs. Without this increase in tariff protection, the economy of the United States would be substantially weaker with respect to national security, general welfare and balance than it was either at the outbreak of World War II or today. In fact, without the impetus given to expansion of productive capacity of these industries, as well as increased productivity, World War II would probably have been lost to Germany and Japan.

This action by Congress was further warranted because of the continuation of the export of capital by the United States to foreign nations and by the probability (which later became a fact) that the inter-governmental foreign debt structure resulting from World War I would be drastically reduced and finally cancelled or repudiated.

In 1922, Congress also raised tariffs with respect to agricultural imports to give greater protection to the American farmer and at the same time established the principle of flexible tariffs with *equalization of production costs* to protect U. S. workers from low-wage labor in various foreign countries.

New Weapons Of Offense And Defense In International Trade—Immediately following World War I, various nations abroad revived both national and international private cartels that had existed pre-war and, in addition, established new cartel agreements, as well as national and international commodity control schemes, most of which were directly aimed at capturing U. S. markets, excluding U. S. exporters from neutral or third markets or exploiting the monopolistic positions of various foreign nations with respect to certain international staples of which the United States was the chief consumer.

In addition, these foreign nations not only revived certain unfair trade practices, which they had engaged in prior to World War I, but developed a wide range of new weapons of both offense and defense which were useful in expansion of their exports and contraction of their imports and were aimed on a discriminatory basis particularly at the foreign trade of the United States, Germany and Japan. These various devices, practices and controls, both offensive and defensive in nature, applied individually or generally in various combinations, are generally acknowledged to be far more effective weapons of international economic warfare and far more effective barriers to the flow of international trade than tariffs on imports. The importance and effectiveness of tariffs as a weapon of international trade warfare has been greatly exaggerated by many economic theorists in earlier years, but the general consensus today is that tariffs are only a relatively minor factor, compared with these other relatively new trade devices.

The development of these practices in the years between the two wars not only increased trade barriers generally and reduced the flow of international trade to levels below those which otherwise would have existed, but in many instances they had the unfortunate result of preventing the normal readjustment of prices, supply and demand following World War I that occurs after all major wars. The consequence was that they finally caused an unprecedented crisis in international finance and trade. The repercussions were much broader, deeper and much more disastrous than they would have been, if the adjustments had been spread over the years. Between 1930 and 1932, the wholesale commodity index in the United States declined 25% primarily as a result of these forces.

Drastic Changes In U. S. Foreign Trade Policies (1930-1939)—In 1930, Congress, in order to counteract the effects of the various manipulative and unfair trade practices adopted by foreign nations against U. S. foreign trade, adopted the Smoot-Hawley Tariff Act, which sharply raised the protective tariff wall around the United States. Though President Hoover did not agree with the measure, it was passed by Congress over his veto.

Smoot-Hawley Tariff Act (1930)—This action was taken deliberately as a protective measure, but its adoption was influenced by a practical recognition of the fact that Allied World War debts to the U. S. government were inevitably bound to be cancelled. It was

further influenced by the desire of Congress to establish higher tariff rates for a stronger bargaining position with the rest of the world.

Whether consciously or not, Congress in its realistic attitude had set the background for an International Trade and Monetary Conference which was the obvious device to effect a general amelioration or elimination of the many unfair practices in international trade and finance. President Hoover in the fall of 1932, with the consent of president-elect Roosevelt, did in fact arrange for an International Conference to meet in London in (June) 1933 to attempt such a revolutionary program. This Conference convened, but the U. S. delegates were withdrawn within a month by President Roosevelt because of his sharp reversal in U. S. foreign economic policies and their objectives.

The Smoot-Hawley Tariff Act has been unfairly condemned from almost every quarter on the ground that it was the most disruptive action that could have been taken by a creditor nation at that time. Despite this criticism, the Act has never been repealed.

In 1933 a change occurred in the political administration of the United States at the lowest ebb of the world-wide depression. The new administration, in order to encourage recovery of prices and reduce unemployment, which had risen to a level of approximately 15 million, undertook for the first time to engage in many of these various practices that had been used by foreign nations in the previous decade.

The first step in this direction was the suspension of the gold standard for political and internal reasons at a time when we had adequate gold reserves to meet all commitments at home and abroad. It was not necessary. Earlier suspensions of gold by most foreign nations had been undertaken because of inability to meet their commitments.

U. S. Dollar Devaluation—Failure To Accomplish Its Objectives—The second step was the devaluation of the U. S. dollar by approximately 40% in 1934, after most of the nations of the world (except Switzerland, France, Holland and Belgium) had taken such action in 1931. By 1933 the full effects of foreign devaluations upon the U. S. price levels and the U. S. economy had been absorbed. Devaluation by the United States in 1934 was motivated by two influences. The first was a desire artificially to raise the internal price structure in terms of cheaper dollars and stimulate recovery and employment. The second was retaliatory against similar earlier action by foreign nations.

As a consequence of the devaluation, there was a temporary recovery in prices. The wholesale commodity index of the United States, to reflect the 40% devaluation, should have risen 70%, but in fact rose only 37½% between 1934 and 1937. It then declined steadily until August, 1939, when it stood at a level that was only 17% above the low level of 1932. In fact, in terms of common or gold dollars, the August, 1939 level was substantially *below* the 1932 level.

Failure Of Reciprocal Trade Program—Instead of cancelling the Smoot-Hawley Tariff Act of 1930, the so-called Reciprocal Trade Program was established in 1934. Under this program, the President was authorized to reduce tariff rates selectively at his discretion from time to time within limits of 50% of their respective Smoot-Hawley rates. This authority was extended and expanded from year to year. Over the years since then, the over-all tariff rates in the United States were reduced *on an average* approximately 45% on more than a thousand items between 1934 and 1939, with a further *average* re-

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duction in rates of 25% by January 1, 1951—a total over-all reduction of 71% between 1934 and 1951.[1]

The Reciprocal Trade Program was a failure from the U. S. viewpoint. It failed to effect elimination of unfair and discriminatory practices against U. S. exports. It failed to expand U. S. foreign trade. It failed to promote recovery in the depression years.

Agricultural exports in 1938 were only 26.5% of total U. S. exports in that year, compared with 39.2% in 1934, the year the program was adopted. U. S. cotton exports, which had averaged 56% of the U. S. crop in 1926-30, fell to only 28% in 1938.

Likewise, unemployment, which had been 15 million in 1933, was still 9 million in 1939. Greater recovery was effected abroad in this period by other nations of the world with respect to prices, reemployment, production levels and exports than in the United States.

In June, 1939 the United States ranked 17th among 18 *leading* nations of the world in degree of recovery to their 1929 levels of industrial production.[2]

In June, 1939, the United States ranked 16th among these nations with respect to reemployment in terms of the 1929 levels.[3]

In June, 1939, the wholesale commodity index in the United States was 21% below its 1929 level and the United States stood 12th among these nations in degree of recovery to the 1929 level.[3]

In 1938, the *gold* value of U. S. export trade was only 35% of its 1929 level in contrast to 62.6% in the case of the Union of South Africa, 56% in Sweden, 48.7% in Belgium, 46.1% in Japan, 45.9% in Canada, 40.2% in Germany and Italy, 38.3% in the United Kingdom and an over-all average of 40.6% in these 18 leading countries.[3]

The effects of the Reciprocal Trade tariff reduction program were partly off-set by the 40% devaluation of the U. S. dollar in 1934, which, had it been fully effective, in effect would have been the equivalent of a 70% increase in all U. S. tariffs which were *ad valorem*. Since then, however, the effects of this devaluation on U. S. tariff have been overcome by subsequent devaluation by most nations of the world.

On March 2, 1934, President Roosevelt, urging the adoption by Congress of the Reciprocal Trade Act, said "Important branches of our agriculture, such as cotton, tobacco, hog products, rice, cereal and fruit raising . . . will find expanded opportunities . . . in foreign markets".

However, as a result of a combination of the Act and the U. S. Farm program, agricultural *exports* in (fiscal) 1939, as a percentage of total exports, reached the lowest level in U. S. history. In 1939, total exports were 51% higher than in 1932, but, while non-agricultural exports in 1939 were 90% *higher* than in 1932, agricultural exports had *decreased* 9%[4].

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[1] *Source*: U. S. Tariff League.
[2] *Source*: Monthly Bulletins of Statistics, (1939) (League of Nations).
[3] *Source*: Review of World Trade, 1938 (League of Nations).
[4] *Source*: U. S. Department of Agriculture Reports.

Between (fiscal) 1932 and 1939, U. S. total *imports* increased only 20.2%. The devaluation of the dollar had partly counter-acted the reduction in tariff rates. *Non-agricultural imports* increased only 20.5%. However, *agricultural imports* that compete with the products of American farms increased 29%, while *non-competitive* agricultural imports increased only 11.8%[1].

[1]*Source*: U. S. Department of Agriculture Reports.

CHAPTER III

OFFENSIVE AND DEFENSIVE WEAPONS IN INTERNATIONAL TRADE

The National Industrial Conference Board in its Summary of its Report says: "Foreign exporters almost universally enjoy the benefits of many and various kinds of *domestic* and *export* subsidies as well as a rather wide variety of types of aid from their government. United States industrial producers enjoy much less assistance of this sort. Postwar conditions have led to the establishment (or intensification where they already existed) of numerous *import* restrictions and exchange controls abroad."

Origin Of Modern Economic Weapons In International Trade—Subsidies of various kinds (direct and indirect), foreign exchange controls and manipulations, and other barriers on export and import transactions in international trade were largely the product of World War I. Prior thereto they were rarely found in international trade. In any case, they were not extensively used. The disrupting effects of World War I, however, were so drastic upon the internal economies and external relations of most European nations, that immediately following the war they developed many and various kinds of new weapons of offense and defense to encourage and stimulate their production and exports and at the same time minimize their imports. By doing so, they hoped to secure continuing surpluses of exports over imports and thereby earn foreign currencies or credits with which to pay the unprecedented international debts that had been incurred by most European nations—primarily to the United States and Great Britain.

As one nation adopted a new offensive weapon to expand its exports, other nations immediately followed suit, while those nations whose markets were threatened with invasion developed new weapons of defense to protect their internal markets. The result was that each device, offensive or defensive, became the weapon for an increasingly intensive, competitive and retaliatory cut-throat warfare among all nations for the constricted trade of the world. Consequently, international trade was reduced to levels below those that otherwise would have prevailed.

Tariffs Less Effective Than Other Trade Barriers—The effectiveness of these various devices, as barriers to expansion of international commerce, in contrast to the relatively lower effectiveness of *tariffs*, has been acknowledged almost unanimously by all who have had experience in this field. On May 20, 1935, U. S. Assistant Secretary of State Grady, only a year after the adoption of the Reciprocal Trade Program by the United States, speaking before the National Foreign Trade Council, said:

> "Even more serious than tariffs and trade barriers and far more threatening with respect to the future of world industrial development is the virtual destruction during the last four years of the structure of international prices because of the gross discriminations, preferential trading agreements and arbitrary control of trade through import quotas, exchange allocations and the like."

In his official 1939 Report, U. S. Secretary of Commerce Harry Hopkins declared:

> "Obstacles to foreign intercourse . . . became perhaps even more numerous and complex during the past year than in preceding years . . . The situation has been rendered the more confusing during recent times . . . by the formation of trade areas and currency blocs to which access from outside areas is completely or partially closed by the use of extraordinary control devices."

The Conference Board summarizes its findings in this field as follows: "Many of these restraints on international trade are far more effective barriers to its expansion than are protective tariffs. Most such restraints are not practiced by the U. S. government and, where practiced, are not generally applied to the electrical equipment industry."

The Conference Board in its Report devotes two entire sections to these subsidies of exports and various restrictions on imports, including exchange quotas and controls. It enumerates the various devices and catalogs those used by various countries to stimulate their own exports and contract imports.

It is advisable here to analyze the effects of these various weapons of offense and defense in some detail in order to appreciate more fully their disruptive effects on international trade.

Export Controls and Subsidies of Foreign Nations

Minimum Export Prices—The most effective weapon used in past and recent years by some nations that enjoy practical monopolistic positions with respect to certain international staple commodities—such as coffee, cocoa, silk, tin, rubber, jute and burlap, nitrates and the like—is the establishment of *minimum* export prices below which no exporter may legally sell.

This device, often accompanied by discretionary export quotas, is effective only where there is comparatively little competition from other areas in the production of these commodities. It permits such nations to extract monopoly profits for the nation and its producers from their trade at the expense of consumer nations. These practices have been indulged in particularly against the United States which in the years between the two wars consumed approximately 70% or more of the world's annual production of these products.

These minimum export prices are usually accompanied by export *duties* which are generally paid by the consumer. These export duties constitute one of the major sources of governmental revenues in these countries. The United States cannot directly retaliate, even if it chose to do so, because of a prohibition in its Constitution against tariffs (and, presumably, other restraints on its exports).

In addition, these countries with monopoly positions have from time to time established national and international commodity control schemes with respect to these particular commodities. These schemes are discussed later.

Export Subsidies—Practically all nations—except the United States—in the first decade between the two World Wars, adopted export subsidies to stimulate their sales to foreign markets. These export subsidies take many forms.

Generally, they are direct cash subsidies to all exporters of particular products, the production and sale abroad of which the subsidizing country hopes to increase. Such subsidies permit exporters to consummate transactions abroad that would otherwise not be possible or would go to foreign competitors whose production costs may be lower. Exporters, for instance, may receive cash subsidies per bushel of wheat or pound of cotton or unit of manufactured product. They may receive flat sums in cash for each export shipment—with higher subsidy rates for higher volume of sales.

Most countries also offer export subsidies in the form of agreements guaranteeing all exporters against losses on foreign sales and insuring the credit of foreign customers to whom sales are made on long-term credit account.

Many export subsidies are indirect, such as the allocation of essential materials—at prices lower than for other purposes—for conversion by producers of export merchandise. At times, only exporters can secure allocations of such materials at any price, particularly in state-trading nations.

Subsidization of exports may take the indirect form of stimulation of production of various exportable items. These indirect subsidies frequently result in sharply increased production volume at lower production costs. They frequently result in sales abroad at prices substantially below those maintained on their home markets by cartelized producers.

All countries follow the general practice of granting exemptions of export sales from excise, turn-over and general sales taxes. In some nations, refunds of special social security and wage-supplement taxes are also made to exporters. In Great Britain, excessively high income and excess profits taxes are said to encourage export sales at prices below production costs in order to reduce taxes that otherwise would become due on domestic operations.

Many countries also stimulate exports by direct grants for export promotion campaigns, as well as by faster write-offs of investments in capital equipment for production of export merchandise.

Discriminatory Subsidies—The worst feature of export subsidies, both direct and indirect, is that they frequently, if not generally, are granted on a discriminatory basis —in favor of exporters to the United States in order to permit the expansion in dollar sales, or to neutral markets where domestic exporters are competing with German, Japanese or U. S. exporters.

As one nation begins a subsidy program, develops a new export subsidy, or increases its rate of subsidy, other nations follow suit with the result that subsidy wars tend to become more and more intensive and extensive.

Foreign Exchange Controls To Stimulate Exports—The manipulation of the values of currencies of foreign nations, as a device to stimulate their exports, has been widely practiced abroad since 1920. Again, they have been practiced primarily on a discriminatory basis against U. S. competitors or used to leap over U. S. tariffs on imports.

For instance, Germany, Japan and Great Britain from time to time, seeking to expand their exports to neutral countries in competition with U. S. exporters, as well as to expand exports to the U. S. market, grant their exporters the right to retain specified percentages of dollars earned from export sales. This is a special discriminatory privilege because all other foreign exchange earned abroad since World War II must usually be delivered to the government of the exporting nation.

In addition, bilateral agreements are frequently negotiated between two nations, with exchange rates adjusted from official parities to permit exchange of products which otherwise would not flow between the two nations, thereby in effect, not only destroying multilateral trade, but reducing international trade to barter on a bilateral basis.

Most nations grant their exporters special discriminatory rights to exchange foreign currencies, particularly U. S. dollars, into their domestic currencies at rates sharply below their official parities, thereby permitting exporters to leap over foreign tariff barriers which otherwise would be prohibitive on a strictly competitive cost basis.

Competitive Exchange Depreciations As Export Subsidies—More important by far than these export and exchange subsidies, discriminatory or otherwise, was the use in the years between the two wars of the deliberate depreciation of a nation's own currency as a weapon of international competition.

There are times when nations are forced by economic conditions and forces beyond their control, as well as by their own mismanagement of monetary, fiscal, debt, and tax policies, to devalue their currencies. This is in effect similar in many respects to bankruptcy of private enterprises. If done for economic rather than political or competitive purposes, devaluation is a necessary step for nations in financial stress. There is no just complaint against it, just as there is none against provisions under national laws for rehabilitation of honest bankrupt private enterprises.

However, the theory of "currency management", which within the last three decades has been practiced by socialistically inclined governments, lends itself directly to deliberate and repeated devaluations for domestic political reasons—in the name of full employment or redistribution of wealth—or purely for the purpose of securing benefits for both the internal economy and the external relations of a nation from relatively short or temporary advantages that always result from exchange depreciations, whether deliberate or involuntary. These advantages accrue, however, only at the expense of other nations and, while temporary, may last for a year or two and cause incalculable damage to other nations.

For instance, foreign exporters selling in U. S. or third markets can, when their own national currencies are cut loose from gold and allowed to depreciate, say, 40% in terms of gold or dollars, sell their export products abroad at a discount of 40% in gold or dollars without reducing the prices of these products in their own currencies.

Effects On United States (1930-1932)—Between September, 1931 and July, 1932, the wholesale commodity index in the United States dropped sharply, largely due to the suspension of gold by, and the resulting reduction in gold prices of the products of, the British Empire and other currency depreciating nations. At that time more than

40 nations suspended gold and depreciated their currencies, as a consequence of the international monetary and financial crisis that had developed following the suspension of reparations by Germany in July 1931. Some of these devaluations were necessary, some were *defensive*, and some were unnecessary, but were essentially *retaliatory*.

Some foreign nations, however, between 1920 and 1939 deliberately or unnecessarily devalued their currencies several times in order to secure the temporary advantages accruing to them from such action. They justified or rather rationalized their devaluations as forced on them by the refusal of the United States to accept their exports in sufficient volume to service their debts to the United States and her nationals. But these devaluations in many instances continued long after they had already defaulted on their debts to the United States.

Devaluations, however, after a period of a year or two, result in rising prices within the depreciating nations and in time, therefore, the advantages on the export markets are lost. Simultaneously, while exports are increasing, the imports of the depreciating nation fall because the purchasing power of the currencies of the depreciating country, with respect to foreign products, is correspondingly reduced. The net result of currency depreciation is the reduction of imports and expansion of exports, thereby maximizing the export balance or reducing the import balance of the depreciating nation.

It is worthy of note here that depreciation of a nation's currency has several effects —the decrease in the *real* wages of the depreciating nation (through rising domestic living costs) as well as expansion of its exports and contraction of its import, with an eventual rise in the internal price level.

Currency depreciation of one nation frequently results in competitive, defensive, or retaliatory devaluations by other nations whose home and neutral markets are threatened by the process. There is, therefore, frequently a spiralling of devaluations, with prices of world staple commodities falling sharply in terms of gold and dollar values.

This process is one of the most powerful factors in the sharp decline in the U. S. wholesale commodity index in 1932, when that index dropped to a point 59% below its 1920 level, with most of this decline coming within the period 1929-32 to break the U. S. price structure.

Quotas, Exchange Controls, Tariffs, And Other Barriers To Imports

Foreign nations, in the period between the two World Wars, not only manipulated their national currencies to expand exports, but also to reduce imports. In addition, they raised their protective tariff rates—frequently to prohibitive levels. However, they developed many other devices of unfair competition to raise increasingly high barriers of various kinds around their domestic markets. Many, if not most, of these defensive weapons of international trade have proven to be much more effective barriers to imports and to expansion of international trade than tariffs on imports.

Domestic Subsidies—One of the most common devices practiced following wars has been the subsidization of home-grown agricultural products by nations in order to reduce their imports, particularly of foodstuffs. For instance, after World War I, most Euro-

pean countries and Great Britain paid as much as the equivalent of 4 to 8 cents per pound in subsidies for home-grown beet sugar for many years behind high tariff walls, when they could buy all their sugar requirements from Cuba or Java at one-third to one-quarter of their home production costs. To a minor degree, similar subsidies were paid to expand domestic industries.

Import Embargos, Licenses, And Quotas—Most nations since World War II have also revived and greatly intensified the use of various other practices to reduce their imports (while expanding their exports).

Their restrictions on imports have been primarily aimed at imports from the United States (except where they are the results of U. S. gifts or loans). They have, therefore, been highly discriminatory and, without doubt, will continue so against U. S. exports in the coming years, as well as against Germany and Japan, unless the United States takes prompt steps to discourage their use. These restrictions are certain to become still greater barriers to international trade, as U. S. economic aid and unsecured governmental loans are sharply reduced or eliminated. The Conference Board Report enumerates the various practices (with respect to limitations on imports since World War II) engaged in by the nine nations covered by its survey.

Discriminatory Quotas On Imports—These devices, all of which merit more detailed analysis as to their effects, include outright embargoes or maximum quotas on particular imports at such low levels as to be in effect prohibitive with respect to various U. S. products. The purpose is to avoid to the maximum extent possible all purchases of any U. S. products which can be bought elsewhere in order to reduce the so-called "dollar shortage". They are available at all times for discriminatory action against the United States in favor of other areas, particularly present or former colonial areas of the importing nation. These discriminatory devices have also been applied to the exports of Germany and Japan in the years between the two wars and are now being so applied.

In respect to other products (those against which prohibitive embargoes are not placed), licenses issued by all governments of the importing nations are required for all imports. These licenses (as is also true of the quotas), are usually granted, not as a matter of legal right of the importer, but as a matter of *executive discretion*. They are used to implement the *quantitative* quotas that are established periodically with respect to particular classifications of imports from all or particular nations. Here again, both the quotas and the licenses are used to discriminate against all but essential products from the United States, especially where they can be purchased elsewhere in currencies other than U. S. dollars.

Discriminatory Exchange Quotas—In addition to these restrictions on imports, there are also highly arbitrary and discriminatory licenses and quotas with respect to foreign currencies which must be paid for imports. Various countries establish exchange quotas for particular foreign currencies, which cannot be exceeded. In addition, special licenses must be obtained by each importer to assure that he will have available the foreign currency with which to pay for particular import transactions. Without such a license,

the transaction is not possible. These licenses are usually granted on a discriminatory basis in favor of "soft" currencies, as compared with the U. S. dollar.

The general consensus is that all or most of these devices are much more effective in the minimization of imports and maximization of exports and in prevention of expansion of international commerce than are tariff structures, particularly where they are left, as they usually are, to the arbitrary discretion of the executive department of the various governments and are not established as a matter of law at fixed rates. They are particularly objectionable where they are used on a discriminatory basis. There has been some justification for them in the years since World War II up to now because of the acute conditions in most nations immediately following the war. But now, with the reconstruction and recovery in production that has been effected largely as a consequence of U. S. grants-in-aid and loans which now are approaching their end, it is certain that all these restrictions will be intensified and used primarily as offensive and defensive weapons against the United States, Germany, and Japan.

Other Unfair Practices In International Trade

Other effective barriers on expansion of international trade are national and international cartels, governmental and intergovernmental commodity control schemes, and state-production, state-financing and state-trading.

Private Cartels—One of the most common, as well as most effective, devices used in the period between the two wars and most likely to be revived and intensified in the immediate future is the international *private* cartel. It has been used extensively as a weapon of offense against particular nations on a discriminatory basis.

Monopoly has never been considered illegal in Europe, as it has been in the United Kingdom and in the British Empire at times (though not since 1920), and in the United States since 1890 (except when chartered as a genuine public utility and so regulated by government to prevent abuses).

The chief function of cartels—private or governmental—is to restrict production, fix prices, allocate sales territories, and generally restrict competition among competitors. They are organized by national producers or their governments in order to effect these purposes within their own countries. Most European industries are so organized. The various national cartels of particular industries are usually coordinated by an international cartel in each field which serves to allocate territory and fix prices on the world markets. Frequently, they have adopted the process of "dumping" their products abroad at prices below those maintained on their home markets.

They also sell cartelized products into third or neutral foreign markets at prices below their true production costs in order to foreclose U. S. and other foreign competitors from entering those markets.

These cartels were so effective against U. S. exporters that, as early as 1919, the United States, through the Webb-Pomerene Act, authorized U. S. exporters to compete,

by coordinated action, with foreign (private) international cartels so as to permit them to retain at least some percentage of their foreign markets in these cartelized fields by mutual agreement with foreign producers. This action, however, is permitted to U. S. exporters only on condition that they do not restrict production, fix prices or engage in other unfair competitive practices on the U. S. (domestic) market.

Private cartels were purely permissive abroad until the rise of dictators outside Soviet Russia in the second decade of the period between the two World Wars. Hitler, Mussolini, and Tojo, each in his respective nation, made cartelization of all industries compulsory under state domination of their production, wages, hours of work, and prices.

These monopolies held domestic prices in their countries at relatively exorbitant levels in comparison with those of the United States. The economies of these nations were based upon *monopoly* capitalism, not upon *competitive* capitalism as in the United States. It was primarily for this reason that the peoples of Europe (and Japan) were willing to accept communism, fascism, or socialism. To them there was little, if any, difference between private monopolies and State-owned-and-operated monopolies.

Since World War II, U. S. industry has repeatedly expressed opposition to the revival of international private or governmental cartels. However, they have been revived in Europe, with the exception of Germany, where they were outlawed during the Occupation, as they were in Japan. Whether or not these two countries will revive cartels, once they regain their full sovereignty, is uncertain. In all probability, however, international private cartels will become much more active and aggressive in coming years. Once more they are likely to become disrupting barriers to freer international trade.

Governmental Commodity Control Schemes—An outgrowth of the international private cartel has been the development of national and international governmental commodity control schemes whereby various governments, acting alone or under international agreement, have attempted to accomplish in respect to raw materials what private cartels did primarily for manufactured products.

Great Britain's Rubber Control Scheme—Great Britain, acting alone for her Far-Eastern colonies, in 1922—at a time when natural rubber from these colonies had fallen on the U. S. market to an annual average of 16 cents per pound (for the standard grade) in contrast to pre-war prices of more than $1.00 per pound—organized the so-called Stevenson Restriction Program which functioned until 1928. The result was a rise in the price of the standard grade of rubber on the U. S. market from a (then) record low of 10½ cents in 1922 to a post-war high of over $1.20 per pound in 1926 under rigidly enforced restrictions on production and exports. By 1928, however, Britain had lost control, at least temporarily, of her monopoly position in rubber.

The Dutch East Indies in the meantime had expanded production sharply under the price umbrella held by the British. Meanwhile, the United States had developed a reclaiming industry which previously had not existed except nominally and research had begun in Germany and the United States to develop a commercially feasible synthetic rubber to free the world from the British natural rubber monopoly. The United States in that period

was consuming more than 70% of the world's annual production of rubber and was paying huge monopoly profits to British colonial producers.

The threat of these developments resulted in the cancellation of the British scheme in 1928, with the consequence that unrestricted production throughout the world drove the price down four years later to an average annual price (for the standard grade) of 5¼ cents per pound in 1932 from the absolute peak of $1.20 in 1922.

This British experience in rubber is typical of most other governmental and intergovernmental commodity control schemes, such as those of Japan in camphor and silk, Brazil in coffee, Bolivia, Britain and the Dutch East Indies in tin, and Cuba and Java in sugar, etc. Largely as a consequence of the economic forces set in action by these schemes, synthetic rubber was developed to break the British rubber monopoly, nylon and synthetic camphor to break the Japanese monopolies, and synthetic nitrates to break the Chilean monopoly forever.

Controlled commodities, once the controls were broken between 1928 and 1931 by economic forces, fell faster and deeper than did the uncontrolled commodities throughout the depression years.

Between 1920 and 1932 the average annual price of the standard grade of rubber in the United States declined 95%, of silk 94%, and of coffee 70%, while the wholesale price index declined 59% in the same period.

The Dutch East Indies later (in 1934) joined the British in reviving the Rubber Restriction Program, which functioned on a more limited production and price basis until the outbreak of World War II.

State-Production, State-Financing And State-Trading—World War I converted Russia into a communist nation. The world-wide depression in the years between the two wars brought fascism in certain other nations. World War II has converted still other nations to milder (until now) form of state socialism.

All forms of state socialism directly or indirectly control production, financing and distribution of goods and services, thereby preempting private entrepreneurs.

During and since World War II many capitalistic nations—even the United States—have engaged in state-production, financing and trading, as temporary emergency operations. Some of these operations, however, have continued up to the present time.

During the war, the United States bought for several years at fixed prices the entire output of Cuban sugar producers, as well as the entire output of the copper mines of Chile and the tin mines of Bolivia. At the same time, Great Britain bought the entire exportable portion of the Canadian wheat crop for five years and renewed the contract for a second period after the war, with the government of Canada selling to the British government at fixed prices.

Temporary Emergency Measures Tend To Become Permanent—These war emergency operations created vested interests which have been loath to see them discontinued. With the refusal of the U. S. government to continue bulk purchasing of the tin output

of Bolivia, that country has nationalized its tin mines. Chile, on the other hand, has not nationalized its copper mines, but now acts as seller of all its copper to world markets at minimum prices fixed by its government. Argentina has for some years followed the practice of buying all its exportable products from its producers and selling them on world markets at profits to its government. A similar operation is being conducted by the British in their West African colonies that produce cocoa. Profits on this operation are accumulated in a fund to improve the living standards of the natives of these colonies.

During and since World War II, various nations, particularly the government of the United States, undertook to make huge free grants-in-aid, as well as long term loans to foreign nations. This practice of state-lending between governments has continued since the war, with the result that private international finance has been to a major degree eliminated.

The effects of state-production, state-financing and state-trading on international trade, particularly with reference to free trade or "freer" trade, are discussed in detail elsewhere in this Analysis. Here it need only be said that all these practices, except in genuine emergency periods, are incompatible with free societies and with free or "freer" international trade.

The U. S. Record In Export Subsidies, Import Controls, And Commodity Control Schemes

The United States, prior to 1929, had never engaged in any of these various monopolistic and restrictive devices, exchange controls, export and import subsidies, commodity control schemes and the like. It had relied solely upon protective tariffs. Since 1934, however, despite the Reciprocal Trade Program, we have adopted a few of these devices. Wherever used, however, they have not been extensively practiced. They have been applied chiefly to protect and support our domestic agriculture.

We have established *quantitative* quotas since 1934 on certain imports, almost exclusively *agricultural*—such as sugar—to protect our farmers. We have also established minor indirect subsidies for *industrial* exports. As the Conference Board's Summary points out, these industrial subsidies have not been generally availed of and are confined primarily to aid in *financing* long-term sales abroad and in supplying insurance protection against defaults in payments.

In 1953 the U. S. government made a long-term loan of $300 million to Brazil to make available dollar exchange with which Brazilian importers (who had received U. S. exports, but had no dollars with which to pay) could honor their obligations. This was an isolated transaction.

U. S. Export Subsidies And Control Schemes For Agricultural Products—One of the major complaints against the United States by foreign nations—in fact, a fully justified one—concerns its farm program which has been in effect since 1933. This program actually began in 1929 in a mild form, as a purely temporary emergency measure of price support on the domestic market. The program was drastically changed during

the depression years, suspended during World War II and revived recently in all its aspects after the European nations had regained their pre-war agricultural production levels and U. S. aid in the form of food shipments abroad had ended, except in isolated cases. The immediate consequence has been a sharp increase in surplus agricultural stocks, owned by the U. S. government, which can only be sold on world markets at prices substantially below those that have prevailed in the United States during and since World War II.

This U. S. farm program is in many respects similar to the commodity control schemes of foreign governments. The latter, however, have been applied by foreign nations against the United States as the chief consumer of these controlled commodities. There is a fundamental difference, however, between the objectives of the U. S. control schemes, as applied to U. S. farm products (wheat, cotton, corn, tobacco, etc.), and the foreign commodity schemes.

Comparison Of U. S. Control Schemes With Foreign Control Schemes—While these foreign schemes have been operated primarily for the purpose of obtaining monopoly profits at the expense of the U. S. consumer, as well as to restrict domestic production, reduce exports, and support prices of these commodities on world markets, the U. S. programs have been aimed primarily at maintaining a prosperous agriculture at home by restriction of production, while disposing of U. S. farm products on foreign markets under cash subsidies from the federal government at prices substantially below those in the United States.

The U. S. farm program for 20 years has been based upon restriction of production of the major farm crops under government control in exchange for direct and indirect subsidies to U. S. farmers in the form of soil conservation payments, minimum price supports at so-called "parity" levels at home and non-recourse loans at or above prevailing market prices. This program has resulted in maintenance of U. S. prices considerably above those prevailing on world markets for such products.

By 1937 the United States under this program had lost its foreign markets for most agricultural products, making exports abroad possible only under federal subsidies. Meanwhile, between 1937 and 1939, huge stocks of cotton, wheat, corn, tobacco, etc., had accumulated for government account and were overhanging the domestic and world markets. In fact, in the years, 1938-39, we exported no wheat or cotton, for example, except under an average cash subsidy of 4 cents per pound for cotton and 30 cents per bushel of wheat. These figures represented the degree to which American prices had been artificially held above world levels. Had not World War II developed in 1939, the world would have witnessed a subsidy war among the nations. Canada had already served notice that U. S. subsidies on wheat, if continued, would be matched by her. Australia and Argentina would have been forced to do likewise.

Foreign Fears—Since 1951 the United States has again resorted to restriction of production and governmental accumulation of huge stocks of agricultural products at prices above world levels. By 1954, it is estimated by government agencies, the United States will have the largest agricultural surplus stocks in its history. Other nations rightly fear that we will undertake to "dump" these stocks under cash subsidies at prices

which may demoralize world markets, affect existing trade channels and seriously impair the trading position of competitive nations. This "dumping" process which we have outlawed since 1921, when practiced on our own markets by foreign nations, would without doubt, if pursued for long, result in a bitter *subsidy war* among competing nations.

Possible Permanent Solution—The solution to the problem, which primarily is a political one, is not easy to find. If we choose to give the surplus products away to needy nations, as a matter of permanent policy, we merely disrupt the normal trade channels of certain other nations and injure their internal economies. Consequently, the only alternative—other than destruction of these commodity surpluses, as Brazil did for 10 years with one-third of its annual coffee crop—that will prevent disruption of international trade is the development of a new and constructive U. S. farm program.

Any new program should be of a long-term nature, designed to solve the problem of subsidized over-production in the United States and to restore and maintain a free agriculture in the country. To do so, we must return to free production, with free marketing both at home and abroad, without government price supports and without subsidization of foreign markets.

This process will, of course, involve the elimination—through revived domestic competition—of the high-cost marginal farmers who are many in number, but produce a relatively small percentage of total U. S. agricultural production. They cannot survive under competitive conditions, except during and immediately following wars when high prices permit them to operate on a profitable basis. This action will result in lower prices to U. S. consumers and lower taxes in the long run to U. S. taxpayers. It will also mean that we can regain our lost foreign markets for those commodities in which we still have real competitive cost advantages.

Any solution to be politically acceptable will require the development of a stand-by program to stabilize farm prices in case of serious, spiralling deflation, such as developed between 1929 and 1932. At the same time, it will require a long range program of federal subsidies to assist the many high-cost marginal farmers to readjust their capital and labor to more efficient fields. It is probable that the cost of such a subsidy program, though large, will be considerable less in the long run to the taxpayer than maintenance of the present program. In any case, the suggested policy—in addition to lowering prices to U. S. consumers—has the merit of effecting an eventual solution of the problem, while the present program merely perpetuates it.

Conclusions

The conclusions from this review of the offensive and defensive weapons in international trade and their relation to the problem of free or "freer" trade on the part of the United States can be best summarized by a quotation from *The Economics of Tariffs* —a Forum held by the National Industrial Conference Board, March 13, 1953. At that time the author of this Paper made the following statement:

> "The latest foreign slogan—'more trade and less aid'—clearly implies that a radical and general reduction in United States tariffs, if not their total elimination

and the acceptance of free trade by the United States at this time and on a unilateral basis, would be beneficial to the American people. It would reduce their tax burdens and foster a more prosperous United States economy. Tariff reduction or elimination is necessary, it is contended, as a solution to the monetary, fiscal, and trade relations problems of the other nations of the western world.

"Advocates of a radical revision of United States tariffs or of unilateral adoption by the United States of free trade fail to recognize that tariffs are only a minor factor under present chaotic conditions of world trade and finance and current international monetary instability. Total, unilateral, and immediate elimination of all United States tariffs would accomplish little in our efforts to stabilize international trade relations in the western world or restore its economic balance on a multilateral basis. So long as international trade, financial, and monetary relations are dominated by socialistic theories of managed currencies, compensatory spending, unbalanced budgets, monetization of public debts, competitive currency devaluations, arbitrary and discriminatory exchange controls, inconvertibility of currencies, artificially maintained exchange rates among national currencies, discriminatory export and import quotas, discriminatory export and import duties, governmental fixation of minimum (monopolistic) prices on exports of major international staples, and state trading, as well as state financing by nations of the western world, it is utterly unrealistic to discuss tariff reductions by, or unilateral free trade for, the United States as a material factor in correction of current instabilities and imbalances in the western world.

"Fundamentally, the problem is what bargaining power have we left to force these nations to come back to principles of free societies? The tariff is one of them. The solution of these problems does not lie in the realm of unilateral free trade or a radical reduction in United States tariffs. Instead, it lies in the restoration, for private individuals, partnerships, and corporations, of freedom to trade. Free markets are the symbols of free societies. Without these freedoms, there is little hope for the western world's survival as a community of free societies. United States tariffs, at best or worst, can be only a very minor weapon in our efforts to persuade and assist nations to return to those freedoms that characterize free societies—freedoms that prevailed generally before World War I and, to a major degree, existed in the years between the two World Wars.

"The most effective use of our remaining tariff structure would be to trade off reductions in, or elimination of, their present rates in exchange for the progressive elimination of foreign discriminatory controls and barriers to international trade, exchange and finance for the benefit of those nations that are genuinely striving to return to the economic and political principles of free societies."

Especially since 1934, repeated efforts have been made by the United States under the Reciprocal Trade Program to secure the elimination by international agreement of the most objectionable of these trade barriers. There has been almost unanimous consent that they should be abandoned and agreements have been executed to that end, but always with "escape" clauses that permitted the continuance of their use under various "emergency" conditions, real or artificial, that never end.

CHAPTER IV

POST-WAR INTERNATIONAL BALANCE OF PAYMENTS POSITION AND ITS CONSEQUENCES

World War II was much more destructive in all respects than World War I not only to the internal economies, but to the external relations of all nations involved in it.

EFFECTS OF WORLD WAR II ON INTERNATIONAL TRADE AND FINANCE

Internal debts of European nations and Great Britain rose to unprecedented levels in terms of constantly depreciating national currencies, most all of which had been cut lose from their gold base long prior to the war. The volumes of these national currencies was expanded by monetization of domestic debts and by direct issues of paper moneys. Consequently these currencies became progressively less and less valuable.

Internal Debt And Currency Repudiation—Again, as was true after World War I, all internal debts, both private and governmental, were repudiated totally in some nations including Germany and Japan and many countries of Southeastern Europe. These repudiations were effected through the total destruction of the values of their currencies and all fixed private and public obligations payable in such currencies.

In Western Europe national currencies were again drastically devalued in varying degrees, ranging up to more than 90% as the table below shows.

Shrinkage in the Value of Foreign Moneys (1939-1951)
(Measured by prices of consumer goods)

	Per Cent Shrinkage as of June 1951[1]		Per Cent Shrinkage as of June 1951[1]
Switzerland	39.5	Colombia	71.6
South Africa	41.6	Argentina	73.4
Sweden	43.7	Spain	73.4
Canada	45.4	Belgium	74.8
United Kingdom	48.5	Mexico	74.8
Uruguay	49.0	Brazil	76.3
Australia	50.0	Chile	85.3
Netherlands	61.5	France	94.6
Egypt	68.1	Italy	98.1
India	68.5	Japan	99.3
Turkey	71.1	Greece	(a)
		China	(a)

Per cent shrinkages are understated in a number of countries owing to the effect of price and rent controls, subsidies on cost of living items, etc., as in the United Kingdom.

[1]Australia, as of 2nd quarter 1951; Argentina, February, 1951; Turkey, Uruguay, as of May, 1951.

[a]More than 99.9 per cent loss.

Source: National City Bank of New York—Monthly Letter (1952).

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External Debts—The outstanding characteristic which differentiates the financing of World War II from that of World War I was the fact that the United States, instead of lending billions of dollars to its allies both during and after the war—as it did in World War I—adopted the more liberal and realistic policy of outright grants-in-aid which are non-reimbursable.

During and after World War I the United States made loans in the sum of $9.5 billion and made no free grants. During World War II the United States made net grants to its allies of more than $40 billion and loans of only $715 million. This policy was continued in the post-war years between July 1, 1945 and June 30, 1953. During the war and post-war periods the United States made total free net grants of $71.9 billion and loans of only $10.7 billion.

The following table shows the grants and loans during both the war and the post-war period, broken down between military and economic aid with respect to the various areas which received these advances.

Summary of Foreign Aid (Grants and Credits); War Period, July 1, 1940 Through June 30, 1945; Post-War Period, July 1, 1945 through June 30, 1953

(In millions of dollars)

	War and Post-War Periods	War Period	Post-War Period Total Aid	Post-War Period Military	Post-War Period Economic
Gross Foreign Aid (Grants & Credits)	94,682	49,224	45,458	8,839	36,619
Less: Returns	12,021	8,253	3,768	145	3,623
Equals: Net Foreign Aid	82,651	40,961	41,690	8,694	32,996
Net Grants	71,936	40,246	31,690	8,580	23,110
Net Credits	10,715	715	10,000	114	9,886
Western Europe and Dependent Areas (Including Greece, Turkey, Finland, Spain & Yugoslavia):					
Net Foreign Aid	57,324	26,643	30,681	6,342	24,339
Net Grants	48,754	26,287	22,467	6,321	16,146
Net Credits	8,570	356	8,214	21	8,193
Other Europe:					
Net Foreign Aid	11,922	10,836	1,086	—	1,086
Net Grants	11,611	10,836	775	—	775
Net Credits	311	—	311	—	311
Near East and Africa:					
Net Foreign Aid			366	—	366
Net Grants			158	—	158
Net Credits			207	—	207
Asia and Pacific:					
Net Foreign Aid			7,695	2,103	5,592
Net Grants			6,985	2,012	4,973
Net Credits			710	91	619
American Republics:					
Net Foreign Aid	1,392	593	799	137	662
Net Grants	737	423	314	137	177
Net Credits	655	170	485	—	485
Canada:					
Net Foreign Aid	17	7	10	2	8
Net Grants	—	—	—	—	—
Net Credits	17	7	10	2	8
International Organizations and Unspecified Areas:					
Net Foreign Aid	3,935	2,882	1,053	110	943
Net Grants	3,690	2,700	990	110	880
Net Credits	245	182	63	—	63

Source: U. S. Department of Commerce — Clearing Office for Foreign Transactions.

The next table shows in summary form the total grants and loans in the post-war period, July 1, 1945 through June 30, 1953, broken down into two periods, one before the Korean invasion and the other after it, with the distribution of these grants and loans among various areas.

Summary of Foreign Aid (Grants and Credits); Post-War Period, July 1, 1945 through June 30, 1953

(In millions of dollars)

	After Korean Invasion			Before Korean Invasion		
	Total Aid	Military	Economic	Total Aid	Military	Economic
Gross Foreign Aid (Grants & Credits)	16,969	7,420	9,549	28,488	1,419	27,069
Less: Returns	1,590	143	1,447	2,178	2	2,176
Equals: Net Foreign Aid	15,380	7,277	8,103	26,310	1,417	24,893
Net Grants	14,667	7,162	7,505	17,022	1,417	15,605
Net Credits	712	114	598	9,288	—	9,288
Western Europe and Dependent Areas (Including Greece, Turkey, Finland, Spain & Yugoslavia):						
Net Foreign Aid	11,368	5,775	5,593	19,313	567	18,746
Net Grants	11,429	5,754	5,675	11,038	567	10,471
Net Credits	— 61	21	— 82	8,275	—	8,275
Other Europe:						
Net Foreign Aid	— 21	—	— 21	1,107	—	1,107
Net Grants	— 13	—	— 13	788	—	788
Net Credits	— 8	—	— 8	319	—	319
Near East and Africa:						
Net Foreign Aid	372	—	372	— 6	—	— 6
Net Grants	238	—	238	— 80	—	— 80
Net Credits	133	—	133	74	—	74
Asia and Pacific:						
Net Foreign Aid	2,886	1,259	1,627	4,809	845	3,964
Net Grants	2,540	1,167	1,373	4,445	845	3,600
Net Credits	346	91	255	363	—	363
American Republics:						
Net Foreign Aid	456	137	319	343	—	343
Net Grants	189	137	52	124	—	124
Net Credits	266	—	266	219	—	219
Canada:						
Net Foreign Aid	10	2	8	—	—	—
Net Grants	—	—	—	—	—	—
Net Credits	10	2	8	—	—	—
International Organizations and Unspecified Areas:						
Net Foreign Aid	309	104	205	744	6	738
Net Grants	284	104	180	706	6	700
Net Credits	25	—	25	38	—	38

Source: U. S. Department of Commerce — Clearing Office for Foreign Transactions.

As was pointed out earlier in this analysis, the debts of the Allied Nations to the United States growing out of World War I were scaled down sharply, after which they were

serviced until 1931 when the world-wide international crisis caused their suspension. Since then they have been defaulted on, except in the case of Finland and additional nominal payments by Great Britain necessary under U. S. law for her to qualify for additional loans. Realistically, however, these World War I debts have been considered dead since 1931.

The total of these debts of all foreign governments to the U. S. government arising out of World Wars I and II (including accumulated interest, but with principal payments deducted) for selected years are given below:

	World War I	World War II
	(Billions of dollars)	
1922	11.7	—
1929	11.8	—
1939	13.2	—
1952	16.7	10.7

Source: U. S. Treasury Department Reports.

It will be noted that the total debts of foreign governments to the United States in 1952 (including the repudiated debts of World War I) were $27.4 billion.

Per Capita Debts Of The Allied Nations To The U. S. Government—Due to the more liberal policy of the U. S. government in World War II and to expanding populations in European nations, in 1952 the per capita debts of the Allied Nations to the U. S. government growing out of World War II were substantially lower than the per capita debts (of these same nations) growing out of World War I. The table below shows these debts only for the nine nations (including Japan) covered by the Conference Board Report:

	1919		1931		1939		1952[a]	
	total debt (millions)	per capita debt (dollars)	total debt (millions)	per capita debt (dollars)	total debt (millions)	per capita debt (dollars)	total debt (millions)	per capita debt (dollars)
United Kingdom..	4.277	97	4.398	95.5	4.368	91.0	4.368[b] 4.732	86.0 93.2
France	3.404	88	3.865 (1930)	94	3.863	94	3.863 2.103	90 49
Germany (West)..	c	c	1.278 (1930)	20.0	1.251	18.0	1.251 239.0	23.0 4.0
Holland	c	c	c	c	c	c	— 336.0	— 32.0
Sweden	c	c	c	c	c	c	— 22.0 (for 1951)	— 3.1
Japan	c	c	c	c	c	c	— 48.0	— 0.8
Italy	1.648	c	2.017 (1930)	49.0	2.005	47.0	2.005 323.0	42.0 6.0
Belgium	379.0	50.0	404.7 (1930)	50.0	400.6	48.0	400.6 172.0	46.0 19.8
Switzerland								

Data represent principal of the debts, not total debts including accumulated interest.

[a]The first figure applies to World War I debts; the second to World War II debts.

[b]There is no change between 1931 and 1952 in the principal of the debt because no payments were made to reduce it after 1933.

[c]None.

Source: *Memorandum Covering World War Indebtedness of Foreign Governments to the United States, 1917-1920*, U. S. Treasury Department, revised July 1, 1941; War Debts and War Prosperity—the Institute of Economics (Brookings Institution) 1932; *Annual Report*, U. S. Treasury Department; and *Annual Abstract of Statistics*, Central Statistical Office, London.

It is interesting to note that the per capita World War II indebtedness of each of these nations to the United States in 1952 was lower than after World War I, except for Great Britain. In all cases, it would be considerably lower than World War I debts, if accumulated interest on World War I debt were considered. It should be recalled, however, that World War I debts have been in default since 1931.

In sharp contrast to these per capita debts of foreign governments to the U. S. government are the per capita debts of the people of the United States to their various levels of government in 1952. In that year the per capita debt to the federal government was $1,651, to the state governments $45, to local governments $144, making an overall per capita governmental debt of the American people to their governments of $1,840. Great Britain's per capita World War I debt to the United States, now in default, is only $86 and its World War II debt is $93. Of the total per capita federal debt of $1,651 in 1952, $450 per capita or 27% of the total represents the $71.9 billion of free grants by the United States to foreign nations since July 1, 1940.

United States Net Private Long-Term Investments Abroad—In addition to debts due the U. S. government, foreign nations or their nationals also have dollar obligations due to U. S. nationals on long-term account. At the same time, foreign nations or their nationals own long-term investments in the United States.

Both foreign investments by the United States and foreign investments in the United States on private account have risen over the years, as follows:

	U. S. Long-Term Investments Abroad	Foreign Investments in the U. S.	Net U. S. Private Investments Abroad
		(BILLIONS OF DOLLARS)	
1919	6.5	2.4	4.1
1930[a]	15.2	5.7	9.5
1940	11.3	8.1	3.2
1945	13.7	8.0	5.7
1950	19.4	8.5	10.9

[a]The data for 1919 and 1930 are not strictly comparable with the data for later years. They are derived from *America's Stake in International Investments*—Cleona Lewis, Brookings Institution. Data for the later years from the U. S. Treasury Reports.

It is worthy of note that since 1945, U. S. private investments abroad have expanded 40% despite chaotic conditions and confiscation in various nations. There is every reason to believe that, if conditions continue to improve and assurances against confiscation are given, U. S. private investments abroad could easily expand sufficiently to counterbalance export merchandise surpluses for an indeterminate period.

Balance Of Payments Position Following World War II—In order to finance the war Great Britain, and other nations to a minor degree, were forced to sell substantial portions of their foreign investments in the United States and elsewhere. As a consequence,

Great Britain's income particularly, from these sources was sharply reduced and her international trade relations greatly disrupted.

Before World War II Great Britain could pay for her large volume of raw materials, imported for conversion and re-export by her industries, and for her large food imports, with the combined earnings of her export trade and foreign investments. After World War II, with income from her foreign investments greatly impaired by two World Wars, she could not expand her exports in sufficiently larger volume to pay for her necessary imports. Until recently, U. S. aid and loans alone have made it possible for her to do so.

With the withdrawal of U. S. economic grants-in-aid, Great Britain now faces a situation where she must somehow increase her exports to balance her imports or she must export ten or more million of her population to her colonial areas or elsewhere. She may be forced to borrow, until she can increase her industrial capacity and productivity to expand her exports sharply, or be threatened with actual starvation.

This development has been one of the major factors in disintegration of international trade and finance relations through the world since 1945. It has been complicated by the fact that the pound sterling has not been tied to gold since 1931 and, consequently, is not convertible on a multilateral basis with the other nations of the world. To a major degree, in so far as the United Kingdom and several other areas are concerned, it is for this reason that the United States undertook extensive grants-in-aid, first, to prevent starvation throughout the world and, later, to expedite rehabilitation of agricultural and industrial production at least to pre war levels in foreign countries. More recently, this aid has been supplemented by military grants-in-aid to those nations cooperating in our mutual security program. In addition, Great Britain found it necessary to borrow additional sums to permit her to balance off her international payments.

The unfavorable balance of payments positions of other nations have not been of the same degree, but nevertheless have been substantial. Not only among these nations, but also with respect to the United Kingdom, there are other major factors involved in their inability to balance off their dollar obligations against their dollar income from all sources.

Chief among these additional factors is the inconvertibility of the currencies of most of the nations of the world into gold and, consequently, into one another, except at artificially determined legal rates or at rates established upon illegal or black markets. Another is the fact that since World War II the nations of the Western World, until their bombed out or dismantled plants had been fully restored to pre-war capacity, were forced to buy from abroad products that could be obtained to a major degree only from the United States. At the same time, until their production had fully recovered, they were not in a position to offer to third or neutral markets the export products which they had supplied in substantial volume to nations of South America, Africa and Asia in the pre-war years. This in turn has in post-war years forced these nations to buy from the United States products which in the pre-war years they had bought elsewhere.

Destruction Of Multilateral Trade—This situation resulted in the destruction of the pre-war triangular or multilateral trade and settlements whereby, for instance, South America sold raw materials primarily to the United States and bought finished products

primarily from Europe or Great Britain. European nations in turn paid for their imports from the United States by credits established in South America. Prior to World War I and in the first decade following it, most all currencies were mutually convertible into gold or one another. Triangular or multilateral trade or settlements avoided the development of so-called "dollar shortages". The current situation in Europe has resulted in an effort on the part of nations of Western Europe and Great Britain to balance off on a bilateral basis their dollar commitments with the United States by their dollar sales to the United States—a process not possible either before World War II or in the early post-war years.

Even if it could be done now, with their recovery of industrial production, it should not be done because the natural and pre-war markets of these nations were not in the United States, but in other world areas. The mere statement of this condition leads to the conclusion that a reduction in the tariff wall protecting the U. S. market will not solve the problem. The only solution which will reestablish international trade, stabilize it and allow it to expand will be the mutual convertibility of all national currencies into gold as soon as practicable and, in the meantime, into dollars which have continued since World War I to be convertible at the U. S. Treasury into gold for foreign governments and central banks in connection with their international trade and finance.

If, as the United States reduces and eventually eliminates its economic aid to Europe, we should attempt to open U. S. markets to these industrial nations of the world, we will make it impossible for international trade and finance ever to become stabilized. The most effective step would be the repulsion of all efforts in that direction by the United States and an insistence that they regain their markets in other world areas, service them as they have in the past, accept the currencies of those nations and encourage the return of those nations to an international gold standard, or dollar convertibility until that is possible. Meantime, the United States can serve those third nations best by maximizing its imports of raw materials from non-European nations and minimizing its exports to them, encouraging them to buy from their (pre-war) European sources of supply.

This analysis will not presume to determine the balance of payments positions of various nations which are available to all government agencies in the latest and accurate form from the U. S. Treasury and the Federal Reserve Board.

A Major Fallacy—The threat or likelihood of withdrawal of U. S. economic aid has raised throughout Europe and even in the United States a demand for sharp reduction in U. S. tariff rates and "freer", if not free trade, on the part of the United States under the slogan "trade, not aid". This concerted drive, similar to that following World War I for cancellation of all debts of foreign nations to the United States, is based upon the misconception that a creditor nation must under all circumstances maintain import merchandise balances, if it hopes to secure repayment of its private and governmental loans and investments abroad. This fallacy is based upon Great Britain's pre-war experience, when her large import balances were counterbalanced by income from large investments abroad.

The United States is in few respects in a position similar to that of Great Britain. The American economy is the most productive economy in the world and can produce at competitive prices both agricultural and industrial products for world markets, as well as main-

tain the highest living standards of the world for its own people. Export merchandise balances can be continued for an indeterminable period by a creditor nation, such as the United States. The excess of exports over imports can be counterbalanced by other services, such as shipping, insurance, tourist expenditures, immigrant remittances and the like, though the most important offsetting factor is the continuation of foreign investments by American nationals at a sufficient rate to overcome annual deficits in balance of payments position that may otherwise accrue.

U. S. Private Capital Exports—The United States has today the largest reservoir of capital savings of any nation in all history available to foreign nationals and their governments on exactly the same basis as capital is available to the U. S. government, the various States and their political subsidiaries and private American enterprises. There is no need of continuation of U. S. government loans or grants abroad, as long as foreign nations and their nationals can borrow at the lowest rates of interest ever enjoyed on free markets in history. All that they need to do is to offer the same collateral security, the same mortgage protection, and the same terms as American enterprises offer and establish the same reputation for moral and financial integrity. All that they need to do to clear the decks for this action is to assure American investors for a reasonable length of time that their foreign investments will not be confiscated without adequate compensation, as India has done recently. The U. S. State Department through diplomatic channels and from other trading posts can expedite such assurances. In passing, it may be noted further that foreign nations and their nationals will hestitate to repudiate private loans that are secured by claims on property within their own jurisdiction, whereas they have little or no hesitancy (based on past experience) in repudiating relatively small (on a per capita basis) obligations to the U. S. government that are not so secured.

In fact, merely through continuation and expansion of foreign investments abroad, the United States can continue to enjoy expanding export balances for a minimum of one or two decades and even longer under existing capital shortages throughout the rest of the world. Such a period of grace in the present chaotic political and economic conditions throughout the world will give us additional time in which to attempt to resolve the cleavages, political, ideological and economic, which now divide the world into two hostile camps.

Under these circumstances and particularly in light of the remarkable, even dramatic change in the balance of payments position of Great Britain and most European nations within the last two years, it would be a mistake for the United States at this time seriously to consider a sharp and overall reduction in its tariff structure. Such a reduction in effect would be the equivalent of acceptance of unilateral free trade in view of the present relatively low level of our remaining tariff structure which has been reduced on an average 71% since 1934.

In this connection it may be noted that in the period, 1919-29, the U. S. merchandise balance of exports over imports averaged $1.331 billion; in the period, 1930-40, it averaged $0.548 billion, or an over-all average of $0.939 billion for the two periods. In the post-war years, 1946-52, (inclusive), the balance has averaged much higher at $4.909 billion, due to heavy U. S. grants and loans abroad which have occasioned the major part of this sharp increase.

The Dollar Gap—The Summary of the Report of the National Industrial Conference Board, speaking of the "dollar gap" says:

> "Substantial losses of foreign investment income and smaller profits from various services since World War II have tended in the postwar years to create heavily adverse balance of payments positions among European countries and Japan, particularly with respect to the United States. This state of affairs, due primarily to lack of multilateral convertibility of most foreign currencies, and the need for goods often available only in the United States, has led to 'dollar drives' and other efforts by foreign governments to subsidize and otherwise stimulate their exports to the United States."

The drive to stimulate exports has been covered in another chapter of this analysis in which various offensive and defensive weapons of international trade have been discussed in detail.

The Conference Board's Summary continues as follows:

> "There has been a dramatic improvement, however, in almost all foreign countries over the last year and a half toward balancing off their respective dollar sales with their dollar purchases. Figures for France for 1952 were not available in time for inclusion in the report. Except for Italy and France all other seven countries (covered in the survey), whose payment balances have been causes of concern, show substantial credit balances in their current accounts for 1952 and to date in 1953.
>
> "If the 'dollar gap' be defined as the excess of the dollar value of U. S. exports of goods and services over U. S. imports of goods and services, then the gap has vanished, at least for the time being. During the year ended June 30, 1953, U. S. imports for the first time since prewar days substantially exceeded U. S. exports for which we were paid. The United States has been called upon in this twelve-month period to settle these adverse accounts by deliveries of gold bullion and transfers of U. S. (dollar) bank balances and federal government bonds or other obligations.
>
> "Foreign nations nonetheless, during this twelve-month period, received economic and military aid from the U. S. in larger sums than during any previous twelve-month period since the war.
>
> "This general reversal of the world's balance-of-payment position with the United States was even more remarkable during the first half of 1953, when U. S. gold, bank balances, and government securities—earned net by other nations—would have more than paid for all economic aid extended by the U. S. in the period."

This quotation speaks for itself. Informed opinion is not unanimous as to whether this dramatic change will endure. Nevertheless, there is almost unanimous support for the belief that the present improvement rests upon much more solid foundations than did a similar improvement in 1950, which was reversed by disruption of international trade and finance that resulted from the Korean War in that year.

An excellent analysis of the current situation, made by Mr. M. A. Kriz (of the Foreign Research Division of the Federal Reserve Bank of New York) is included in the Report of the Conference Board. His conclusions are given below:

"Far from demonstrating the prevalence of an intractable 'disequilibrium', the postwar dollar 'shortage' for the most part has therefore been a sign of the rapid recovery of Western Europe and its overseas currency areas, and of the free gifts made by the United States and Canada to speed up postwar rehabilitation and reconstruction. A rapid economic expansion and an acceleration of investment throughout the free world during the earlier postwar years was one of the major purposes of United States foreign policy. When the recipients of American aid had succeeded in employing their own resources fully and in restoring fiscal and monetary order, the dollar 'shortage' largely disappeared. Even though it is not possible to isolate the fundamental factors working toward a dollar equilibrium from the temporary and extraneous ones, these favorable circumstances must not be allowed to obscure the remarkable improvement in the basic international economic situation that has been achieved thus far.

"Today, the main cause for skepticism is the fact that the closing of the dollar gap is taking place in an environment in which the ability of nondollar countries, especially most Western European nations, has not yet been tested by currency convertibility and a reduction in trade discrimination. Nevertheless, recent developments have given rise to new hope that many of these countries, even while continuing to meet heavy defense requirements, will succeed in the triple task of stabilizing their currencies, re-establishing efficient, flexible, and self-supporting economies, and rebuilding their monetary reserves. These developments have also strengthened the conviction that, if the recent improvement in the international payments position is to be sustained, effective policies will have to be devised, in the United States as well as abroad, to promote a much more integrated pattern of world trade."

By any measure, this remarkable reversal in the balance of payments position with the United States is most convincing proof of the effectiveness of U. S. aid programs. It is also evidence of the fast growing strength and return to full competitive position by the industrial and exporting nations of Europe.

Improvement In International Conditions—At the same time, full credit must be given to those nations which have by their own initiative adopted and enforced policies that have finally succeeded in most countries in putting an end to the spirals of inflation that followed World War II. Balanced budgets are no longer considered old-fashioned. They eliminate the temptation to create money artificially by monetization of expanding debts. Instead, they stabilize the debt and pave the way toward the convertibility of currencies. They bring nearer the time when the various unfair discriminatory exchange controls and other restrictions on international trade and finance can be ended. Already they have resulted in reduction of these restraints on their internal and foreign trade, even though they have not relaxed them with respect to U. S. exports and U. S. dollars.

As the Conference Board points out in its Summary of its Report:

"Germany is now outstripping all others in return to normal peacetime operation, despite loss of East Germany. Replacement of bombed-out and dismantled ma-

chinery and equipment in Germany and Japan has given these countries more technologically efficient industrial plants than they had prewar. Because of their more efficient industrial plants, trade taking the place of aid might well benefit Germany more than any of our World War II allies. However, both Germany and Japan must expand their exports outside the Iron Curtain or they will be forced to do so inside that Curtain to support normal employment and feed their peoples."

Consequently, not only the United States, but European nations as well, in their struggle for maintenance of their present improved balance of payments positions, are certain to find Germany and Japan their foreign chief competitors for their internal, as well as their overseas, markets.

Need For Return To Convertibility—The concept of "the dollar gap" is a clever semantic trap which has succeeded in misleading the entire world, including many in official and unofficial positions in the United States, as to the cause of the situation which the concept supposedly characterizes. It has succeeded in convincing all who are not familiar, even experts, in the field that the United States is to blame for the situation and, consequently, must, as the most powerful and the largest creditor nation of the world, take steps to cure it.

Immediately following World War II, when there was no occasion for it, there was a similar attempt to rationalize the shipment of huge quantities of materials to prevent starvation through the world. This rationalization took the form of convincing the American people that the United States, in order to "insure full employment" and to prevent a world-wide depression of the order of that of 1929-39, must continue its huge exports under a more or less permanent give-away or subsidy program. This drive was made during the period when foreign agricultural and industrial production was sharply below their pre-war levels.

It soon became obvious that production levels would recover much more quickly than had been anticipated, as a consequence of U. S. economic aid for rehabilitation of production. Then various other drives were originated in Europe to convince the American people that the lack of multi-lateral convertibility of most national currencies was due to inability to offset dollar commitments with dollar sales to the United States, and could only be cured by opening U. S. markets to European competitors.

The truth is, as pointed out earlier, that such inconvertibility was due to the fact that the currencies of foreign nations had in most instances been cut loose from gold since 1931 and were not mutually acceptable. As a consequence, international trade has become bilateral rather than multi-lateral and, in many instances, was reduced to what is in effect barter through bilateral agreements and bilateral settlements. This in turn resulted in the destruction of the old triangular or multi-lateral trade, such as that by which Europe sold to South America, South America sold to the United States and the United States sold to Europe. The destruction of the triangular trade and payments systems has resulted in the demand that the United States open its markets to European by-products which it does not want and reduce its purchases from South America of the

materials which it greatly needs. On the other hand South American countries do not want to sell to European nations for "soft" currencies that are inconvertible into gold, when they can sell for convertible dollars, and Europe does not want to sell to South American countries for currencies that are likewise not convertible into dollars.

Need for Return To The Gold Standard—The surest solution to this problem is the return to the international gold standard. Only the United States and Switzerland are now on that standard. Conditions are rapidly developing which, if encouraged, can result within the early future in the return of the major nations of the world, with the possible exception of Great Britain, to at least a modified form of the gold standard. Britain most likely would require more time. By doing so, all national currencies would again become mutually exchangeable for one another and triangular and multilateral trade and settlements would be immediately revived. The normal trade channels of the world, developed over the past two centuries, would be reestablished, except in the areas now under the domination of Soviet Russia.

The premium on gold on the free and black markets of the world, which since World War II had existed in terms of depreciating currencies, has now disappeared following the balancing of European budgets, the end of debt monetization, artificial creation of money at rates faster than production growth, and the improvement in the balance of payments positions of most nations, as their exports have expanded at a rapid rate in the past two years.

Even here, however, another attempt to mislead the American public has been made. For several years there have been drives to persuade the United States to devalue the dollar in terms of gold and give the large profit therefrom to other nations either to assist them in elimination of the "dollar gap" or to permit them to return to the gold standard more quickly.

One such proposal advocated an increase in the price of gold from $35 to $50 an ounce, which would show a profit of $23 billion on the U. S. gold stock, and turning this profit over to some international agency to dispense to foreign nations as they needed it. There is another school, with headquarters in South Africa and various European cities, that advocates an increase in the gold price to $70 an ounce, giving a profit of $35 per ounce on the U. S. gold stock. The London *Economist* even proposed that the United States create $35 billion of new money merely by bookkeeping entries between the U. S. Treasury and the Federal Reserve Banks to establish an international clearing union. The article admitted that "three really bad years or even less" might exhaust the fund.

All these proposals are attempts to assure continuation of handouts to the rest of the world at the expense of the U. S. taxpayer or by some sleight-of-hand trick, such as devaluation, which their proponents fail to point out would certainly result, sooner or later, in drastic inflation in the United States.

These various proposals, however, are rationalized by so-called economists who justify them under the guise of "saving the free capitalistic enterprise system from itself".

The National City Bank of New York in its *Monthly Letter* of March, 1953 summarizes some of these proposals and concludes rather tersely that "dollar shortages

among foreign nations, as well as citizens at home, spring out of inability or unwillingness to keep a balance between income and outgo" and concludes that "it will be well, if the *Economist's* suggestion proves to be the dying gasp of post-war European inflationism". The Bank in the same *Monthly Letter* comments "virtually all (of the various U. S. aid programs) have been justified in the name of 'dollar shortage' which has been accepted as the cause of inconvertibility".

Now comes the latest drive from abroad on behalf of "trade, not aid," the fallacies of which have been exposed earlier in this analysis. In this connection a quotation by the National City Bank is pertinent. It quotes from an article in *The Banker* (of London) in September, 1952. There the writer, speaking for "A Program For the Commonwealth" comments on the problems of the *sterling area* as follows

> " 'The main fault of the overseas sterling area and particularly of the overseas dominions since the war has lain in the excessive volume of imports and this has been associated with its uneconomic industrialization schemes——
>
> "The blame that Britain must bear for successive sterling area crises since the war is . . . perhaps less obvious than the blame that must be borne by the overseas dominions. But it is nonetheless real. Britain's fault has lain in its failure to readjust its pattern of production so as to be able to offer the goods that the outside world is now willing to buy from it—and to offer them at suitable delivery dates, in the right markets and with the right degree of persistent sales pressures . . . There is no doubt that British engineering concerns could have found much larger markets in Canada and, still more, other non-sterling markets outside the United States, if they had only been obliged to look for them since the war".

The National City Bank itself concludes:

> "The purpose of these citations is to drive home the point—that the real solution of world currency disequilibrium, of which the dollar problem is a manifestation, lies not in some simple magic like upvaluing gold, but in tackling realistically the harder task of putting the underlying condition to right. This means such things as suppression of inflation, the greatest of all wreckers of currencies; offering, as the quotations above prescribe, the right goods in the right markets with the right degree of persistent sales pressure; willingness on the part of creditor nations to accept payments in goods and services; and encouragement of a favorable climate for international investment.
>
> "The basic weakness of the case for a higher gold price is that it accomplishes none of these things. Instead it applies the poultice of inflation over the whole situation, thereby discouraging efforts to find the true remedy. Can anyone doubt that the outcome would be further procrastination and delay in making the difficult readjustments essential for restoring order and stability in international economic relations?"

The Bank might also have added that the same procrastination and delay in making the difficult adjustments essential for restoring order and stability would ensue from the

opening of U. S. markets to European competitors in order to relieve them of the burden of rebuilding their old markets in their proper channels of trade, the failure to do which will only perpetuate rather than cure the so-called "dollar gap".

Conclusions

The United States under these circumstances is fully justified in rejecting the demand from Europe that the United States accept on a unilateral basis the doctrine of free trade. While the United States should be willing at all times to review its tariff structure, at this time it should carefully survey the entire international situation. In view of the failure of the Reciprocal Trade Program to effect reciprocal benefits to the United States in exchange for the 71% reduction in over-all tariff rates which the United States has effected since 1934—and in view of the intensification, rather than decrease, in the use of both offensive and defensive weapons of unfair competitive practices in international trade by European nations who have benefitted from the U. S. program—in view of all that, the least that the United States can demand is the elimination of discriminations against the U. S. dollar and U. S. exports.

The United States should use its tariff bargaining position—or what is left of it—along with any other trading asset it may have, to encourage the British Empire and other nations to break down all discriminatory tariffs and other barriers by which for years they have protected their own and their colonial areas against the products, not only of Japan and Germany in the years between the two wars, but also of the United States.

Until these discriminations are removed against all nations, neither British nor other nations can come to the United States with clean hands, demanding that we eliminate or sharply reduce our protective tariffs. This is true, not only with regard to the United States, but with regard to Germany and Japan. Both of these nations, as in the past, would look toward countries that are now under the domination of Soviet Russia for large markets for their exports. To what extent they trade behind the Iron Curtain is a matter of great military importance to the Western World and, if in the interest of the defense of the Western World, they agree to limit trade with Russia and its satellites to nonstrategic exports, they should be given reasonable opportunities to make up any resulting deficiencies through larger exports to the markets of the Western World, including the United States. Germany is particularly handicapped—compared with her pre-war position—because of the loss of a large portion of her agricultural production behind the Iron Curtain and little prospect of its recovery in the foreseeable future. Meanwhile, her populations has been substantially increased by refugees from East Germany and East Europe.

The Conference Board's Report attempts to evaluate, not only the loss of trade of European nations, as well as Japan, because of the Iron Curtain, but also the losses which these nations have suffered as a consequence of the partial disintegration of their colonial empires.

However, it should be noted here that in many instances these colonial powers still retain special privileges in their former colonial dominions in respect to common currencies, as well as traditional trade channels, debtor-creditor relations and other financial

and commercial ties which are not easily broken. As a consequence, these colonial losses may not prove to be as serious as they appear on the surface. Without question, Great Britain, Holland, Belgium and France will continue to be in privileged positions in regard to international trade with respect to colonies which they have lost, if for no other reason, because of large debts incurred during World War II by these nations to their colonial areas—debts which are not likely to be liquidated other than through trade relations or unilateral repudiations.

Japan, however, is in a particularly vulnerable position with respect to her natural markets in China which may be foreclosed to her to a major degree for an uncertain period in the future. She likewise has lost substantial territorial areas held before the war and will be faced with an extremely serious problem of maintenance of employment and preventing starvation among her people.

CHAPTER V

A CONSTRUCTIVE ECONOMIC FOREIGN POLICY FOR THE UNITED STATES

In formulating a constructive economic policy for the United States it is desirable to determine the objectives and to appraise the alternatives presently facing this country.

Objectives Of A Constructive Policy

Maintenance Of Economic And Military Strength At Home—There is general agreement that the paramount requisite of a constructive and enlightened economic foreign policy for the United States is, above all and at all costs, to remain strong at home both economically and militarily. If foreign policy in any respect weakens the United States internally, it will defeat its own purposes by undermining not only our national security, economic health, and general welfare, but also the leadership which the United States necessarily has assumed in world affairs. Strength at home requires avoidance of economic depression at home, if the United States is to provide the stability upon which the Western World depends in the apparently interminable Cold War now being waged from behind the Iron Curtain.

Our military strength itself (both external and internal)—which must be sufficient to meet the threat of degeneration of the Cold War into atomic warfare at any time—depends upon the maintenance of a strong domestic economy and the continued soundness of all segments of our agriculture and industry, especially those branches of industry which constitute the mobilization base built with such care and at the cost of billions of dollars at home and abroad in recent years.

It is essential that our domestic basic communications, transportation, and water, gas and power systems which serve all other productive and distributive facilities be kept efficient and protected from threats from any quarter. Those basic industries on which these systems are dependent—such as the Electrical Manufacturing Industry—are essential to the entire military establishment and civilian defense. They must be prepared to cope with national disaster of any nature which affects the national health, welfare, and security.

These systems and their underlying industries must at all costs be kept independent. The United States can no more afford to become dependent upon foreign industries and servicing in these critical areas than in the servicing of our Merchant Marine or our military establishment at home.

Therefore, in any review of foreign economic policy, considerations assuring the continued expansion and preservation of a domestic economy, strong both for peace and for war, should predominate.

Maintenance Of Proper Budgetary, Fiscal And Monetary Policies—Just as vital a consideraton of every nation seeking internal security and stable external economic relations is the re-establishment at home of governmental fiscal, budgetary, debt, and monetary

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policies that will avoid either inflation or deflation to the maximum extent possible in, and compatible with, a free society. The United States must put its own house in order in this respect before it can point its finger at other nations.

In this connection, it is pertinent to quote here Professor Lionel Robbins (of the University of London) speaking recently to a British audience on foreign trade policy, as follows:

> "But in the last analysis, until [internal] *financial* conditions are under control, *trade policy is without a foundation.* It is indeed not easy to overstate the central importance of financial policy in this matter of international balance. For dispassionate study of the facts must surely reveal that *it is the failure of [internal] financial policies which has been responsible for the persistence of our troubles*—to be perfectly explicit, that *it is the failure of the nondollar centers to restrain their [internal] expansion which is responsible for their failure to get nearer to closing the dollar gap.*"[1] [Emphasis supplied]

In other words, the United States, as well as foreign nations, must put an end to the spirals of inflation (that have prevailed throughout the world in varying degrees since 1939) by re-establishing and maintaining balanced budgets, thereby putting an end to the continuous and artificial increases of money supply—by monetization of the public debt —at rates faster than increases in production of goods and services.

Both our debt and tax structures in the United States are now so high that any acute and continuing emergency that develops before we have substantially reduced both our present per capita national debt and our tax rates could result in total repudiation of our public and private debts and our currency, as well as confiscation through capital levies or still higher tax rates. This has already happened in many foreign nations twice in the four decades since World War I.

Since 1939, the over-all production of goods and services in the United States has less than doubled, while in this same period the over-all money supply has approximately tripled,[2] a combination of factors that is responsible for our current fifty-two-cent consumer dollar.

Termination Of Foreign Economic Aid—For 14 years large areas of the world have been recipients of huge quantities of money loaned, or, more frequently, given as free grants, by the United States out of the pockets of American taxpayers. There was urgent need for such action during World War II and in the early post-war period to prevent first, loss of the war and later, starvation, as well as to effect necessary rehabilitation. With industrial and agricultural production in Europe now above pre-war levels in all countries, it is clear that U. S. economic aid has accomplished its laudable objectives there. There is, therefore, no further justification for U. S. governmental gifts and loans to Europe for economic purposes (until and unless new, genuine emergencies arise). The U. S. taxpayers can no longer afford to continue such foreign economic aid under any pretext so long as present conditions prevail abroad. Should we continue to do so, our domestic

[1]National City Bank of New York—*Monthly Letter*—March, 1953.

[2]Calculated from U. S. Department of Commerce and Federal Reserve Board Reports.

economy could be so weakened as to destroy the present international balance, as uncertain and tenuous as it now is. There is, however, a constructive alternative that is open to us.

The United States since World War II, according to official U. S. reports, has developed the largest reservoir of private capital savings in history. Prevailing interest rates are as low as they have ever been in past history on free markets. Foreign governments and foreign private enterprises are as free to borrow on the American capital market today on the same non-discriminatory basis as any American citizen or corporation. The only limits are sound credit, adequate security, and financial integrity.

The U. S. government under present circumstances should, therefore, put an end to foreign economic grants-in-aid and governmental loans in general, whether made to foreign governments or private enterprises.

Encouragement And Protection Of U. S. Private Investments Abroad—We should encourage by every means at our disposal the flotation of bonds and stocks of both foreign nations and private enterprises upon the U. S. capital market. They can offer the same incentive and the same security (by mortgage, etc.) for the investments as are offered by our own governmental units and our private enterprises seeking capital for productive purposes.

In order to spark our private foreign investments, however, our State Department should through diplomatic commitments secure the maximum assurance possible from each nation of full protection to American investors against confiscation or nationalization without adequate compensation of any project in which U. S. and other foreign capital has been invested. Such assurances have recently been obtained by private enterprises from some nations, as, for example, India.

A consistent policy of expansion of U. S. exports of *private* capital from the United States is the only effective method by which we—as a great creditor nation—can expect to enjoy continuing surpluses of exports over imports and at the same time maintain stable international trade relations and assure multilateral convertibility of foreign currencies, without continuation of U. S. governmental grants and loans. This process cannot continue indefinitely, for a time must eventually come—though it may be after the lapse of one or two decades or more—when annual interest and profits and principal repayments on foreign investments will become so large that the United States will be forced to accept import balances or suffer defaults on its private and governmental investments and loans abroad.

This substantial lag of possibly a decade or more will be of incalculable benefit to the United States and the Western World. It will permit more orderly readjustment to existing unstable conditions in international trade and finance. Furthermore, in this period the bitterness of the Cold War and the economic and political cleavages between the Western World and the Iron Curtain nations *may* be gradually minimized, if not eliminated. Finally, this period will permit a better solution of the problems involved in raising the living standards of foreign nations, particularly in the presently overpopulated and undeveloped areas of the world. This can be accomplished through normal international trade and properly secured international loans and investments among

private enterprises rather than by unsecured loans or non-reimbursable grants-in-aid from the U. S. government to foreign nations or their nationals. Special incentives, such as tax exemptions, fast write offs, etc., could be offered by both U. S. and foreign governments.

As soon as foreign governments find that they can no longer rely on free gifts or unsecured loans from the U. S. government—that are more easily repudiated than secured private loans and investments—whether sought for economic rehabilitation or for socialization of their economies—internal economic and political pressures on them and their private enterprises for modernization and expansion of their productive facilities will force them to take advantage of the U. S. capital market.

Encouragement Of Technological And Market Development—There are two respects in which the U. S. government can give continuing constructive aid both to Europe and to undeveloped areas of the world, thereby further encouraging self-help and self-reliance

With respect to Europe, the United States has already through economic aid made possible full post-war recovery in production and technological improvement of European productive facilities. New stimulation would involve technical assistance with respect to broadening and developing Europe's internal markets, especially if they become free markets.This stimulation can be effected at relatively small costs through an understanding and acceptance of more advanced American marketing techniques, salesmanship, advertising and other marketing practices, and the development—as a consequence thereof—of substantial increases in public demand and in volume of production, thereby securing lower unit production costs, lower prices and better qualities through standardization and similar practices. This course will also increase the national incomes, tax revenues, exports to neutral markets and the living standards of all the nations that follow it.

With respect to the *undeveloped* nations of the world, which presently are primarily the great raw-material-producing areas, technical aid and pilot plant operations financed by the U. S. government, if necessary, can be justified under current conditions. Even the development of industrial production in those nations—where there is a real chance of their obtaining comparative cost advantages sufficient to justify their efforts—should be encouraged through *private* American capital investments. Even a moderate increase in the purchasing power through greater production and productivity would expand not only the living standards of these nations, but also their imports of U. S. and other foreign products.

In general, however,—it cannot be repeated too often—it should be made clear to the rest of the world that the period of easy loans, free of security and freely repudiated, and free grants from the United States for general economic aid, rehabilitation and expansion has ended.

As Secretary of the Treasury Humphrey recently stated (before the Advisory Group on International Trade under the Chairmanship of Senator Homer Capehart) on September 15, 1953):

> "However, as Secretary of the Treasury, I want to make clear to everyone that the government must question both its right and its financial ability to con-

tinue to use taxpayers' money to finance investments abroad on a large scale in the development of competitive enterprises."

It should be made clear to European nations that, if they want to socialize their economies, if they want government-supported medical care, health programs, or a 40-hour week, while other nations competing with them in international trade are working 48 and 49 hours per week, they must be able to support such programs from their own resources. In short, if other nations want to socialize their economies, but cannot afford it, they can no longer expect U. S. taxpayers to continue to subsidize them. Our taxpayers already have the largest per capita tax burden of any nation except Great Britain. Any increase could in time place us in an embarrassing financial condition similar to hers.

Continuation Of Military Aid—A constructive economic foreign policy in the foreseeable future will require that all foreign assistance, except as above noted, be confined strictly to military aid and only to those nations which are willing fully to cooperate with the United States in its military and security programs. Care should be taken to prevent using military aid as a cloak for economic assistance. Such aid, as well as spending abroad by U. S. military agencies and personnel, will continue for many years to be stabilizing forces in settlements of the international balance of payments.

Development Of Continental Free Trade Areas Or Customs Unions—Perhaps the most constructive form of self-help to be encouraged abroad would be prompt development by foreign nations of continental free trade areas or customs unions within Europe, the British Empire, South America and Africa. There is no need of waiting until Europe and the other areas have been fully federated politically.

A first step in this direction has already been taken. The Schuman Plan for the coal, steel and iron industries—already in operation in six European nations—as well as the Customs Union of The Netherlands, Belgium and Luxembourg—are significant and encouraging developments. They are, however, defective in that, while they have created *common* markets, they have not attained *free* competitive markets within their jurisdictions. Under the Schuman Plan a supra-national authority is empowered within its jurisdiction to restrict production and fix prices and even wages—controls which do not exist in a truly free market.

Discouragement Of National And International Cartels—In other European nations, and in areas other than coal, iron and steel of the Schuman Plan nations, cartels are still legally permitted to exist. One of the most constructive things which the United States could encourage abroad, therefore, would be the elimination of all national and international cartels, governmental as well as private. Competition in production and distribution within the United States has been a primary factor in our higher and constantly expanding levels of production and productivity, as well as living standards. Europe and the rest of the world can not hope to attain our over-all productivity and living standards until they accept the principles of free competition on their domestic markets.

It is these principles that account for the ability of the United States to produce 40% of the total production of goods and services of the entire world, despite the fact that it has less than 8% of the land area and population of the world.

Discouragement Of Discriminatory Trade Practices—Until the chaos that has prevailed in international trade and finance since World War I and II has been eliminated and these fields have been returned primarily to *private* channels, it is unrealistic to expect debtor nations—or those nations that must expand their exports in order to prevent starvation or maintain reasonable levels of employment—to eliminate their present barriers on the expansion of international commerce. The many and varied *export* subsidies and the various tariff walls, exchange controls, quotas, and other barriers against imports—that have plagued international commerce since World War I—will be practiced until stability and multilateral convertibility of national currencies (into gold or U. S. dollars) have been reestablished.

However, conditions have so remarkably improved—mainly as a result of U. S. aid—that the United States is fully warranted in demanding *now* the removal of *discriminations* by all nations of the Western World against U. S. exports and U. S. dollars. These discriminations began in the period between the two wars and have been sharply intensified since the end of World War II. Great Britain and her Empire since 1932 have been among the chief offenders in this respect.

These same discriminations have been directed against Germany and Japan—in past years—and will become increasingly intensified in coming years, as they seek enlarged export outlets to maintain employment and even prevent starvation. If these discriminations are continued and intensified, Germany and Japan may be forced behind the Iron Curtain.

All further U. S. assistance abroad—even military aid, as well as any further reductions in the U. S. tariff structure—should be conditioned upon elimination of these *discriminations* against not only the United States, but also Germany and Japan.

As has been emphasized elsewhere, export subsidies and barriers to imports are much more effective weapons in international trade than tariffs. They also should be discouraged by every means at the disposal of the United States.

Encouragement Of An International Gold Standard—All nations of the world should be urged to return to an international gold standard as soon as possible. The recent suspension of inflationary trends throughout the world should make it possible for many nations to return to gold in the near future.

With the price of gold now back to its pre-war level of $35 per oz. on both free and black markets, new gold production can be channeled into governmental monetary and central bank reserves. It is not too much to expect that most major nations can within 5 years return to gold. Each nation that does so is increasing international stability and multilateral convertibility of national currencies.

The United States has remained on an international gold standard. It could encourage others to do so by various means and should do so, short of subsidization. It could also encourage it by return to full convertibility of its dollar into gold on the domestic market.

Meanwhile, multilateral convertibility of national currencies in terms of the U. S. dollar should be encouraged. So-called "administrative convertibility" by currency man-

agement is an illusion in a world that is plagued by black markets in currencies due to their official *over-valuation* in terms of gold and the U. S. dollar. So long as the currency of any nation is over-valued, its imports are increased and its exports are decreased from levels that would otherwise prevail, thereby increasing the so-called "dollar gap".

The parities of all national currencies should therefore be reexamined. Free markets for foreign exchanges should be legally re-established. They should be permitted to serve the useful function they performed before they were outlawed in most nations during and since World War II.

Discouragement Of Governmental Commodity Control Schemes—Much that has been said with reference to state trading and financing applies equally to national and international commodity control schemes—state trading schemes—operated by governments. Here the United States—in its agricultural program—is equally guilty with many foreign nations. All these schemes should be eliminated by international agreement as soon as possible, with a reasonable time to permit orderly economic and political adjustment under well-conceived programs for liquidation of their present commitments and provision for relief and assistance to those injured by readjustment to free markets.

For the United States now to accept the doctrine of unilateral free trade or its equivalent—an over-all general reduction of its present relatively low tariff structure—would be merely to invite inroads by state-producing, state-trading and state-financing nations at a time when the world economy is more vulnerable than at any time during previous history.

Discouragement Of State-Production, State-Trading And State-Financing—The United States should use all its influence and trading position to encourage or even demand (in exchange for other benefits) elimination by other nations of these practices by nations that claim to be free societies. They are incompatible with free markets and free societies, as well as with the principles of free or "freer" international trade. These practices, which in most nations have been the outgrowth of World War II, preempt the functions of private enterprises.

They have tended to perpetuate themselves in both European and other foreign countries, especially those which are now under strong socialist influence. The result of their continuation beyond genuine emergency periods will almost inevitably be the ultimate socialization of those societies that practice them.

They have, however, special significance in the area of international trade. It is possible for nations operating under some system of national socialism to wreck the international trade of the Western World by sales made for political or military reasons into foreign markets at prices without reference to production costs. Fascist and communist governments have in the past employed large-scale slave labor in their industrial and extractive enterprises. Today, it is estimated by United Nations agencies that Soviet Russia, since World War II, has had as many as 12,000,000 of such slave laborers.

It will also be recalled that in the period between the two wars Russia, over a period of two years, exported wheat to world markets at the cost of starvation of several millions

of her own people. From time to time in the current post-war era, Russia has also attempted to obtain control of, or extend her influence to, particular nations or areas by preempting their entire—or a large share of—export trade at prices *above* world levels.

Present Alternatives Facing The United States With Reference To International Trade Policy

The Reciprocal Trade Program, begun in 1934 and continued until the present, has been a failure when its results are realistically appraised. There has been little or no actual trade reciprocity by other nations in exchange for the past sharp reductions effected since 1934 in the Smoot-Hawley tariff rates of 1930. Since World War II ended, unfair competitive practices in foreign trade, especially discriminatory practices against the United States, have become intensified and have nullified most of the so-called reciprocal concessions granted us. Little now remains of the 1934 tariff structure. Average rates have been reduced 71% since then. There are, however, still high rates on specific products which the United States can never hope to produce in any substantial volume. There are also areas in which U. S. tariffs can be reduced in the public interest without serious injury to U. S. farmers, capital, or labor.

However, any further adjustments in the remaining structure, even in these areas, should be used to force reciprocal action abroad—and, if reciprocal benefits are not actually realized, we should cancel all such concessions. In fact, we should at the same time not hesitate to *raise* tariff rates, where selective study of particular rates and particular industries show that such action is advisable and in our enlightened self-interest.

Any further *general* reductions in U.S. tariff rates would be disastrous to many industries, to large segments of our labor and agriculture, as well as to many entire communities which could easily become ghost-towns.

Over-all national security considerations require that, in implementing the policy of selective tariff adjustment, or any other economic foreign policy, recognition be given, not only to the necessity for protecting every basic industry that is vital to national defense or is a key to the maintenance of the independence of any segment of our entire military establishment from foreign sources for essential equipment, but also to the assured maintenance of a strong, healthy, and dynamic over-all economy for the nation. These considerations cannot be governed by ordinary economic rules. Whether the protection is afforded by higher tariffs or other restraints, including "Buy-American" policies in this area, we must not sacrifice our national defense and general over-all security at home in the name of aid abroad. These national defense and home security needs are similarly recognized by all foreign nations in the General Agreement on Tariffs and Trade.

Consequently, the United States—if it is to act realistically and not emotionally in the revision of its foreign economic policy—is faced with three possible alternative policies with respect to international trade: ***multilateral*** free trade, ***unilateral*** free trade, or *selective* adjustments for particular industries and for particular products within industries.

Multilateral free trade is an impossible ideal for the present world and could not be attained even in the Western World under existing conditions, including the Cold War of uncertain duration. There is no possibility of any substantial group of nations agreeing to accept it *now* as their foreign trade policy. Even if it were possible, the principles of international free trade are founded upon private competitive and free enterprise activated by the profit motive. The existence of totalitarian powers would jeopardize the functioning of multilateral international free trade under any circumstances, and especially *now*.

Unilateral free trade and its fallacies have been fully analyzed earlier. Its great short-term advantages and the long-term disastrous consequences to Great Britain, which practiced it advantageously for 65 years, have also been discussed earlier. If the United States alone should undertake *now* to engage in international free trade, the short-term consequences would be elimination of many of our industries which admittedly now operate under *comparative cost disadvantages* in competition with the products of these same industries in foreign nations. Unilateral free trade would mean prolonged unemployment in large segments of our labor and agriculture, and disruption of whole communities. In addition, there would be serious impairment of investments in both agriculture and industry.

Even the long-term benefits—which unilateral free trade might afford—are uncertain, vague, and unlikely to develop at this juncture in world affairs. They can hardly justify the acceptance now by the United States of these short-term consequences.

Our tariff structure at present is so low, compared with all other major nations, that an over-all reduction of even minor proportions would in effect be the equivalent of the acceptance of unilateral free trade and have the same short-term evils and the same uncertainties in respect to the long-term benefits.

Selective adjustments, usually made effective through changes in customs rates for particular industries and for particular products of various industries, is, therefore, the only realistic alternative remaining for the United States. Any downward adjustments in rates should be based on studies, industry by industry and product by product, as President Eisenhower has recommended. Such a selective adjustment can be effected, if made realistically, to the benefit of the United States as a creditor nation and without serious injury to its farms, its industries, and its labor. It is equally important, however, that selective studies be made of the advisability—even necessity—of *selective increases* in tariff rates now applicable to particular industries and their products.

While most of those raw materials, with which the United States is not naturally endowed, are presently subject to no duty, there are some in respect to which it would be to the over-all interest of the country to eliminate existing tariffs, particularly where there can never be any substantial production of such products within the United States. Readjustment aid to capital and labor in these fields could be provided on a temporary basis, by direct federal subsidies where the injury proves sufficient to make it advisable.

Wherever, as a result of studies, the decision is made substantially to reduce or eliminate tariffs, the general consensus is that such eliminations or reductions should be spread over a period of time to allow for orderly readjustment of capital and labor to other more efficient fields of endeavor. This course may be preferable to putting such measures into effect immediately, but obviously it would postpone any early substantial benefits to foreign countries from U. S. tariff reductions. The only alternative course is immediate elimination or full reduction of tariff protection on certain industries or certain of their products, with temporary governmental subsidies to capital and labor of such industries during the readjustment period. This course would give foreign competitors immediate benefits from expanded exports to the United States. However, it would amount to a sharp reversal of our foreign aid program under which we have subsidized foreign countries since 1945. Under this alternative we would *subsidize our own industries*. In other words, "trade, not aid" for Europe, Asia, and Africa would be converted to "aid, not trade" at home. In any case, the same U. S. taxpayers pay the subsidy bills, regardless of the recipients of the subsidies, and similar vested rights in the continuation of the subsidies would be created.

All procedural and technical delays with reference to all commodity classifications and rates applicable thereto—that have grown up over recent years—should be eliminated. However, the rights of U. S. importers to appeal to the courts should be carefully preserved to prevent illegalities and inequities due to wrongful classifications. At the same time, U. S. producers, threatened by foreign imports, should be given the right to appeal to the courts from administrative rulings on "peril point" and "equalization of costs" provisions of the Tariff Act, as well as on rates and classifications.

The Customs Simplification Act of 1953, although a step in the right direction, merely relates to certain customs procedures. In enacting it, Congress purposely avoided the more difficult and important problems because of pressure of time in the last session.

PART II—The Foreign Trade Position of the U. S. Electrical Manufacturing Industry

CHAPTER I

THE IMPORTANCE OF THE ELECTRICAL MANUFACTURING INDUSTRY IN THE U. S. ECONOMY

The Report of the National Industrial Conference Board was prepared basically to provide information on the current competitive position of the U. S. Electrical Manufacturing Industry in foreign trade. This Industry constitutes a large and increasingly vital segment of the U. S. economy and in many respects its problems are representative of those of many manufacturing industries in the United States. The Board's Report contains, therefore, a great deal of information which has general application to the over-all economic foreign policy of the United States.

THE ELECTRICAL MANUFACTURING INDUSTRY AS A KEY INDUSTRY IN THE U. S. ECONOMY

The United States today enjoys the most highly electrified economy in the world. Electric power is as essential to modern American civilization as any prime factor on which it rests. All industrial production and distribution, all communications and transportation, as well as the living standards of the people, are dependent upon the constant expansion in the electric power industry and the Electrical Manufacturing Industry which serves it. Practically every home, farm, commercial establishment and industry in the country is today dependent on electric energy and power-producing facilities, as well as proper maintenance and servicing of such facilities.[1]

The Electrical Manufacturing Industry has been the leading contributor to the continuous increase in our industrial productivity and our steadily improving standards of living. It has led the way through constant research and development into new scientific fields. It is this Industry which has brought about the age of electronics and must continue to lead in the development and application for civilian purposes of atomic and nuclear energy that hold incalculable promise for the future.

In addition, the Industry holds a paramount position in national defense. It has demonstrated this fact in two World Wars. It is a producer of essential products ranging from jet engines to radar, from electronics to thousands of electrical equipment items upon which the armed services depend. All modern aircraft, ships and fire power are dependent upon it. Its particular skills and facilities have been extended, when needed, to war materiel far afield from electrical equipment.

Apart from its essential nature as a direct producer of war materiel, the nation's entire industrial mobilization base is dependent upon not only power, but the availability of emergency and maintenance service for power-generating equipment. The ability to restore production following enemy attack is vitally essential to survival of the United States in the atomic age. A strong and prosperous Electrical Manufacturing Industry

[1] *Source:* The Report of Stone & Webster Engineering Corporation.

in the United States is vital not only to the national economy, but also to a strong and prosperous world economy.

The importance of emergency and maintenance service is illustrated by the problems raised by the recent Kansas City flood and New England hurricanes, as examples of catastrophes that might disastrously affect the national health, welfare and safety.

The National Industrial Conference Board (as stated earlier), on behalf of the National Electrical Manufacturers Association, commissioned the Stone & Webster Engineering Corporation to undertake a study of all related problems and past experience applicable to them.

The findings of the Stone & Webster Engineering Corporation may be summarized, in part, as follows:

> A continuous uninterrupted supply of electric power in the United States has been so nearly achieved that American industries expect it, depend on it, and have adjusted their operations to this expectation. This is particularly true of the many automatic or continuous processes which are characteristic of American modern, efficient operations. * * * The water supply for public consumption and, hence, sanitation and public health, is almost entirely dependent on electric service.
>
> Approximately 20% of the scientific and engineering personnel in the manufacturing industry in the United States are engaged in electrical work. * * * Approximately 25% of the funds expended for research and development in all manufacturing is spent in the Electrical Manufacturing Industry.
>
> The Electrical Manufacturing Industry maintains a field staff of over 3,000 engineers and 5,000 skilled workers throughout the United States for servicing equipment. * * * The manufacturing and service shop facilities of the American electrical manufacturers are available widely throughout the United States. * * * The extensive servicing resources close to the American customer maintained by U. S. electrical manufacturers have not and probably could not be developed with economy by any foreign manufacturers selling electrical products in the United States.
>
> In the event of war, foreign manufacturers probably would not be able to service or deliver equipment. * * * U. S. manufacturers would have difficulty in repairing foreign-built equipment because of insufficient information, unavailable shop drawings and differences in construction requiring the manufacture of special tools and other facilities.
>
> The Electrical Manufacturing Industry in the United States has rendered expeditious and important service in the installation of electrical service in emergencies such as disasters caused by flood, fire and explosion which could not be duplicated by foreign manufacturers. * * * There are many examples showing the inability of foreign manufacturers to deliver, repair and service important electrical equipment during war and the years following war. The operation of important power plants has been delayed for years where equipment was ordered from foreign manufacturers.

Finally, the Electrical Manufacturing Industry is a vital factor as a supplier of essential heavy power equipment and maintenance services for all federal multiple-purpose dams and power projects, existing and future, and for the federal atomic and nuclear energy plants.

In a dynamic and expanding free economy, there is essential need, not only for governmental agencies and governmental capital in special fields, but primarily for private agencies and private capital constantly devoted to expanding technological research, experimentation and development of new sources and uses of power. Only a strong, aggressive and prosperous industry is capable of furnishing the extensive capital resources necessary to absorb the risks involved in such extensive and speculative research and development work. The function of government in free societies should be limited to those areas in which the risks are too great for private capital to absorb.

In conclusion, Secretary of the Interior McKay's recent statement, in reply to a question whether the United States now has enough power to take care of our national defense needs in case of all-out mobilization, is pertinent:

> "It would be nip and tuck, of course, just as it was in the last war. We have out in the Northwest three large dams under construction which will have a maximum capacity of slightly more than 3 million kilowatts. They are the Chief Joseph, McNary and The Dalles dams. But I do believe that we are in a better shape today than we were at the beginning of the last war.
>
> "I think the big thing for this country is power producing energy, whether it be hydroelectric, gas, natural gas, coal or atomic energy—whatever can do the job—".[1]

It is worthy of note that the three new federal dams mentioned will increase the total generating capacity of the country by only 3%.

While the foregoing discussion relates primarily to the generation and transmission of power through public utilities, they also apply to the field of utilization of that power. It is unquestioned that the utilization of electric power in industry, on the farm and in the home has become of increasing importance to the United States. No walk of life, regardless of its complexity or simplicity and regardless of its location in the United States, can enjoy normal U. S. standards of living today without an adequate and uninterrupted supply of power. The importance of the Electrical Manufacturing Industry in improving the standard of living in this country and the dependence of all phases of life in this country upon equipment not only for the generation and transmission, but also for the utilization of power is universally recognized.

The Extraordinary Growth Of The Industry

The United States was organized as a nation only shortly before the development of mechanical power. Through the use of the steam engine—which sparked the Industrial

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[1] *United States News and World Report*, October 9, 1953.

Revolution of the first half of the 19th century—the United States, a strictly agricultural economy in 1789, gradually developed a substantial and varied industrial capacity under a protective tariff policy. This was given a further impetus in the second half of the 19th century by the general conversion of steam to electric power. Between 1880 and the outbreak of World War I in 1914, many American industries, using new mass-production techniques, possible only because of electrical power, had become as technologically efficient as those of Europe and Great Britain.

This relatively rapid expansion of American industry on a new, naturally endowed, but undeveloped and underpopulated continent was possible only under a combination of factors. The most significant of these factors included unrestricted immigration, protective tariffs, and the development of mass-production techniques, made possible because of a more rapid expansion in the Electrical Manufacturing Industry than in over-all industry. In fact, without the development—under tariffs—of U. S. potential of electric power and the equipment to produce it, the swift conversion and expansion of American industry during World War I would not have been possible and that war could have been lost to Germany.

World War II gave a similar, but much greater impetus to all American industry, whose expansion had stagnated during the depression decade, 1929-39, after a remarkable expansion during the 1919-29 decade under a still relatively high protective tariff wall. Over the entire course of American industrial development, the Electrical Manufacturing Industry's growth has been at a much more rapid pace than that of industry as a whole.

The vital importance of the Electrical Manufacturing Industry, particularly that branch of the Industry which produces electrical power equipment, to the future of the U. S. economy is emphasized by Secretary McKay's statement:

> "Just as water is the prime requisite for the agricultural development of the country, power from whatever source is the prime requisite for the future development of our nation industrially."

The importance of the Electrical Manufacturing Industry is clearly indicated by a brief review of various trends in the Industry over recent years.

Expansion In Production And Sales—Total sales of the Industry between 1919-52 increased at an annual average rate of 7.4%—in contrast to a rate of only 3.4% for all manufacturing industry.[1] In fact, sales of the Industry *doubled every ten years*, while sales of all manufacturing industry increased *only 40% in each decade* of the period.

The Industry's sales, as a percentage of the Gross National Product, have risen from less than 2% in 1939 to 4% in 1953.[1]

This much sharper rate of growth of the Industry's sales has not been due primarily to increases in prices of its products, as is shown by the following table:

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[1]Calculated from U. S. Department of Commerce and Federal Reserve Board Reports.

Percentage Increase in Wholesale Price Indexes

(1946-52 over 1935-39)

All Commodities	Industrial (Other than farm products and food)
93%	75%

The Conference Board's Report shows that the *over-all* price level in the Electrical Manufacturing Industry has increased (about) 75% in the post-war period—the same rate of increase for over-all industrial products.

Expansion In Number Of Manufacturing Establishments In The Industry[1]—Between 1939-51, the number of productive establishments in the Industry rose from 1,979 in 1939 to 3,973 in 1947, and, finally, to 4,294 in 1951, showing an increase of 117% in 12 years.

Over the same period, the number of productive establishments in all manufacturing industry rose from 173,802 in 1939 to 240,881 in 1947, and, finally, to 261,944 in 1951, showing an increase of only 51% in the same 12 years.

This rapid rate of growth in the number of operating units in the Industry—at a rate more than twice that for all manufacturing industry—indicates not only more rapid growth, but also more active and expanding competition among its many large and small producing units.

The record also shows that over the years the ratio of combined sales of the two largest units in the Industry to total Industry sales has declined. In fact, in 1936 two companies of the Industry accounted for 37.6% of its total sales. By 1951, combined sales of the two companies had fallen to 27.6% of total sales of the Industry. This trend also clearly indicates a healthy and increasingly competitive Industry.

Expansion In Employment[2]—Total employment in the Industry in (September) 1953 was at an all-time peak of 1,210,000. This number of wage and salaried workers represented 7% of the total employment in all manufacturing industry. For comparison, in 1939 total employment in the Industry represented only 4% of total employment in all manufacturing industry.

Since 1939, total employment in the Industry has, in fact, increased 210%, in sharp contrast to an increase of only 70% for all manufacturing industry.

The Industry's rate of increase in total employment was three times the rate of increase in total employment for all manufacturing industry over the 14-year period.

While the Industry's sales (as a percentage of the Gross National Product) *doubled* in this period, total employment in the Industry more than *tripled*.

Hourly Rates Of Pay, Weekly Wages And The Work Week—The Electrical Manufacturing Industry has kept pace fully with all manufacturing industry with respect to (average) hourly rates of pay, weekly wages and the work week:

[1]Derived from U. S. Bureau of Labor Statistics Reports.

[2]Calculated or derived from U. S. Department of Commerce and Bureau of Labor Statistics Reports.

	Average 1953	Average 1949	Average 1939
Electrical Manufacturing Industry			
Hourly Rate	$ 1.67	$ 1.43	$ 0.70
Weekly Wages	68.64	56.56	27.09
Work Week (Hours)	41.10	39.50	38.60
All Manufacturing Industry			
Hourly Rate	$ 1.67	$ 1.40	$ 0.63
Weekly Wages	67.97	54.92	28.86
Work Week (Hours)	40.70	39.20	37.70

Source: Bureau of Labor Statistics, U. S. Department of Labor.

Expenditures For New Plant And Equipment—Investment of private capital by the Industry in new plant and equipment has increased since 1939 at a higher rate than in all manufacturing industry, as the table below indicates:

	1953	1949	1945	1939
	(Millions of Dollars)			
Electrical Manufacturing Industry	376	216	123	49
All Manufacturing Industry	11,990	7,150	3,980	1,940

Source: Reports of U. S. Securities and Exchange Commission and Department of Commerce.

Capital Investment In The Industry—The total capital investment in the Industry, as well as the *per production worker* capital investment in the Industry, has shown a healthy increase between 1939 and 1949, as is shown by the table below:

Capital Investment

Year	Total		Per Production Worker	
	All Mfrs.	Electrical	All Mfrs.	Electrical
	(Millions of Dollars)		(In Dollars)	
1939	$ 49,203	1,328	6,006	4,627
1949	$109,349	4,580	9,429	8,207

Source: U. S. Department of Commerce Reports.

As is shown by the above table, capital investment in the Industry between 1939 and 1949 increased 245%, whereas capital investment in all manufacturing industry in the same period increased 122%—only half as much. Dollar investment per production worker in the Industry increased 77% in contrast to 57% in all manufacturing industry.

The relatively higher increase in capital investment *per production worker* in the Electrical Manufacturing Industry is particularly significant in view of the fact that *total* employment in the Industry rose at three times the rate in all manufacturing industry between 1939 and 1953.

Total Power Generating Capacity—As is shown by the following table, in 1952 the total power-generating capacity of the United States was nearly five times its capacity in 1922. It nearly doubled between 1939 and 1952. And perhaps even more important, between 1949 and 1952 it has increased 27%:

Year	Capacity[1] (Millions of Kilowatts)
1922	20.5
1932	42.8
1939	49.4
1949	76.6
1952	97.1

[1]Includes capacity of industrial establishments for their own use.

Source: Federal Power Commission Reports.

Expansion In Use Of Electric Power Per Man-Hour In All Manufacturing Industry—One of the most significant contributions to the ever expanding productivity of American society has been use by all manufacturing industry of a constantly increasing amount of electric energy per man-hour.

As shown by the following table, in 1952 all manufacturing industry used about 4½ times the amount of energy per man-hour used in 1922. Even between 1949 and 1952 the increase has amounted to 14%:

Year	Total Industrial Kilowatt Hours Per Man-Hour(a)
1922	1.94
1932	4.62
1939	4.92
1949	7.54
1952	8.60

(a)Per man-hour of production and related workers in all manufacturing industry.

Source: Federal Power Commission and Bureau of Labor Statistics Reports.

For U. S. industry to maintain in the future its normal increase in physical output in the face of a probable ceiling on the labor force and a desirable (gradual) reduction in the work-week, both of which are indicated in the foreseeable future, it will be necessary to expand still further and at a more rapid rate the industrial use of electric energy per man-hour.

Profits And Taxes In The Electrical Manufacturing Industry—The data, as set forth below, show the steadily increasing burden of the costs of government upon the U. S. taxpayers and the increasing role of all manufacturing industry as a tax-collecting agency for government.

Profits Before and After Federal and State Income and Excess Profits Taxes

Period	All Manufacturing Industry		Electrical Manufacturing Industry	
	Before Taxes	After Taxes	Before Taxes	After Taxes
	(Millions of Dollars)			
1929	5,038	4,403	208	178
Average (1935-39)	2,973	2,334	127	101
Average (1946-50)	17,522	10,302	1,251	403
Average (1951-52)	24,113	10,485	1,461	876

Source: U. S. Department of Commerce Reports.

In 1929 all manufacturing industry retained *after* taxes 88% of its profits *before* taxes (as defined in the above table). In the period, 1935-39 (inclusive), it was able to retain on an average only 78% of its profits *before* taxes. In the post-war period, 1946-50 (inclusive), it was able, on an average, to retain only 59%.

This trend has continued into the present. In 1951-52 all manufacturing industry was able to retain only 43.5% of its net earnings *before* taxes. In other words, the percentage (before taxes) retained has been cut in half since 1929.

The table below gives statistics for *leading* manufacturing companies in the electrical field and for *leading* manufacturing companies in all industry with respect to *net profits after taxes, as a percentage of net worth.* They show that, despite the relatively faster increase in demand for electric power and the machinery and equipment to produce and use it than for the products for all industry, profits *after taxes,* as a percentage of net worth in the Electrical Manufacturing Industry, are only moderately above those for all manufacturing industry.

Profits After Taxes As a Percentage of Net Worth

Period	Leading Manufacturers All Industries	Leading Manufacturers Electrical Industry
	%	%
1929	12.8	17.7
Average (1935-39)	8.2	9.9
Average (1946-50)	15.7	17.9
Average (1951-52)	13.4	15.4

Source: National City Bank of New York

It will be noted from the following table that in 1929 profits *after taxes,* as a percentage of *sales* in the Electrical Manufacturing Industry, were substantially higher than such profits in all manufacturing industry:

Profits After Taxes As a Percentage of Sales[a]

Period	All Manufacturing Industry	Electrical Manufacturing Industry
	%	%
1929	6.3	10.5
Average (1935-39)	4.2	7.0
Average (1946-50)	5.3	5.0
Average (1951-52)[b]	4.5	4.6

[a] Federal and State corporate and excess profits taxes.
[b] Including first three quarters of 1952 only.

Source: U. S. Department of Commerce Reports.

The comparative advantage in net profits enjoyed by the Industry was somewhat lower in the depression period, 1935-39, than in 1929. However, this advantage has been lost since World War II, as is indicated by the figures for 1946-50 (inclusive), when the average in the Industry for the entire period had fallen sharply from 7% in the pre-war period to only 5%, while the average in all manufacturing industry for the period had risen to parity with the Electrical Manufacturing Industry. This development indicates increasing competition for the markets of the Electrical Manufacturing Industry.

The data in the table below show that the Industry pays a substantial portion of the total federal tax burden on all manufacturing industry and that the Industry's tax contribution is sharply increased in war periods.

Taxes Paid[a]

	Electrical Manufacturing Industry	All Manufacturing Industry	Ratio Of Electrical To All Manufacturing Industry
	(In Millions)		%
Average (1935-39)	$ 26	$ 639	4.1
Average (1940-44)	406	6,305	6.4
Average (1945-49)	297	6,238	4.8
Average (1950-52)	818	12,777	6.4

[a] Taxes in this table include only federal income and excess profits taxes.

Source: Department of Commerce Reports.

CHAPTER II

THE COMPETITIVE POSITION OF THE ELECTRICAL MANUFACTURING INDUSTRY IN INTERNATIONAL TRADE IN THE CURRENT POST-WAR PERIOD

The competitive position of the Electrical Manufacturing Industry is the primary subject of the Report prepared by the National Industrial Conference Board for the Industry. Much of the data and conclusions therefrom relate to the position of the United States itself in international trade.

Post-War Expansion And Trends In Exports And Imports Of Electrical Products

The Report of the Board establishes that the dollar value of total sales of U. S. corporations manufacturing electrical products, as well as the dollar value of both U. S. exports and U. S. imports *of such products*, have risen sharply in the post-war years, 1946-53 (inclusive), but at widely varying rates.

Total sales of electrical products by U. S. manufacturers in this post-war period have averaged *6.6 times* their average for the pre-war years (1935-39 inclusive).

Exports have averaged in the post-war period *4.9 times* their pre-war average.

Imports have averaged in the post-war years *4.6 times* their pre-war average for 1936-39 (inclusive).

In its Summary, the Board, in commenting upon a very significant change that has developed since 1951, says:

"While total sales in 1952 were *nine times* their prewar average, *imports* in 1952 were *twelve times* their prewar average. In contrast, *export sales* in 1952 were *only six times* their prewar level.

"The foregoing data are expressed in tabular form below:

	Average Annual Sales Value (1935-39=100)	
	1946-52	1952
U. S. Imports	455	1210
U. S. Exports	490	630
U. S. Manufacturers' Total Sales	660	900

"The rate of increase of *imports* of electrical equipment reflects the rehabilitation of foreign industry and its approach toward a surplus position.

"The rate of increase in *imports* has accelerated significantly in more recent years, as compared with a slowing down in the growth of *exports*.

"This divergence in trends became far more marked in 1953, as is shown by the following table:

First Half of 1953 Over First Half of 1952 Per Cent Increase	%
U. S. Imports	50
U. S. Exports	9

"Excluding Canada, exports for the first six months of 1953 were 7 per cent *below* those of the first six months of 1952."

Adjustment In Import Data—U. S. official tariff classifications of imports of manufactured electrical products include a variety of special machinery items (strength testing equipment, cigarette vending machines, etc.) which constitute a substantial percentage of the total volume of imports of electrical products, as officially classified. However, the Industry does not consider these special machinery category items as properly germane to the Industry. Consequently, candor and fairness make it advisable to adjust the official data on imports—as the Board itself pointed out—to exclude this special machinery. The effect of this adjustment can be expressed as follows:

While total *sales* of the Industry in 1952 were *nine* times their pre-war average, competitive *adjusted imports* in 1952 were *eight* times their pre-war average (instead of twelve times). In contrast, *export* sales in 1952 were only *six* times their pre-war level.

After this adjustment, however, the same divergence in trends (which has developed in the last two years between exports and *total* imports of electrical products) is still found. In fact, electrical equipment imports (adjusted) during the first 6 months of 1953, exceeded (adjusted) imports during the entire 12 months of 1952 by 20%. On the other hand, *exports* of electrical machinery *in the first 6 months* of 1953 were 46% below such exports during the *entire 12 months of* 1952.

Comparison Of Total Sales Of The U. S. Industry, U. S. Exports Of Electrical Products And Imports Of Competitive Products In Selected Years—The table below shows the Industry's sales, exports, and competitive imports, as percentages of the Gross National Product for selected years between 1920 and 1953:

Year	Percentage of Gross National Product Electrical Machinery and Equipment		
	Industry Sales	Industry Exports	Competitive Imports(1)
1913(a)	n.a.	0.1	0.002
1920(a)	1.13	0.1	0.001
1929(a)	2.32	0.1	0.003
1935-39 (Average)	1.85	0.1	0.002
1946-50 (Average)	3.35	0.2	0.002
1951	3.70	0.2	0.005
1952	3.95	0.2	0.005
1953 (1st 6 mos.)	4.40	0.2	0.010

(1) Includes turbines and water wheels and parts, but excludes special machinery (strength testing equipment, cigarette vending machines, etc.)—the special machinery category items discussed in the text under *Adjustment in Import Data.*

(a) Data for these years differ slightly from those for later periods.

n.a.—Not available.

Source: Calculated from U. S. Department of Commerce Reports.

The above data are significant. They confirm earlier conclusions of this analysis to the effect that there has been a continuous and steady increase (except in the depression period) in the production, sales and importance of the Electrical Manufacturing Industry. They also show sharply increasing imports (in contrast to exports) since 1950.

The following table shows the *dollar value* of exports and imports of electrical products, as well as their relation to the dollar value of total sales of the Industry:

	U. S. Electrical Manufacturing Industry				
	Total Sales	Exports		Imports(a)	
		Amount	% Sales	Amount	% Sales
	(Dollar figures in Millions)				
			%		%
1920	$ 1,050	$ 95.6	9.1	$ 0.5	0.05
1929	2,400	122.6	5.1	2.8	0.12
1935-39 (Average)	1,562	97.9	6.2	2.1(b)	0.13(b)
1946-50 (Average)	8,369	445.3	5.3	4.0	0.05
1951	12,170	536.6	4.4	14.6	0.12
1952	13,740	616.4	4.5	17.4	0.13
1953 (1st 6 mos.)	8,100	334.5	4.1	20.8	0.26

(a) The special machinery category items discussed in the text under *Adjustment of Import Data* are not excluded because data to do this are not available for 1920 and 1929.

(b) These data are the average for 1936-39.

Source: Derived or calculated from Bureau of Census, U. S. Department of Commerce Reports.

While the dollar value of both exports and imports are relatively small, the trends over the years are of great significance with respect to future prospects for both imports and exports.

In 1920—after two years of adjustment from the disruptions caused by World War I—export sales, as a percentage of total sales of the Industry, sharply declined between 1920 and 1929, falling from 9.1% of total Industry sales in 1920 to only 5.1% in 1929. Beginning with the end of World War II, following the same pattern, exports again declined steadily to only 4.1% during the first six months of 1953 in contrast to only 6.2% of total sales in the pre-war period.

On the other hand, in sharp contrast, imports—after the two-year readjustment following World War I—rose from 1/20 of 1% of the total Industry sales to 1/8 of 1% in 1929. The same percentage prevailed in 1952, but most significantly this percentage has doubled in the first six months of 1953.

Total (unadjusted) imports of electrical products have soared from only $4 million (average) for 1946-50 to $14.6 million in 1951, $17.4 million in 1952, and $41.6 million in 1953 (based on the first six months). *In other words, total imports in 1953 will be more than ten times their 1946-50 average and more than twenty times their 1936-39 average. At the same time exports in 1953 will be only 50% above their 1946-50 average and less than seven times their 1935-39 average.*

The phenomenal increase in the total, as well as the rate, of U. S. both adjusted and unadjusted imports of electrical products, compared with U. S. exports of such products, and their diverging trends in more recent years indicates a sharp and sustained drive on the part of foreign exporting nations, now that they have recovered and exceeded their pre-war industrial levels, to capture a substantial portion of the U. S. electrical equipment business. This fact, despite the present relatively small ratio of U. S. imports to total U. S. sales of electrical products, signifies a grave danger, which appears certain to become increasingly harmful to the Industry and the U. S. economy. Steps should be promptly taken to strengthen substantially rather than impair the protective tariff wall behind which the American Industry has thrived and served the public interest in the past.

U. S. Government Purchases Of Heavy Electrical Equipment From Abroad—The statistics set forth in the Conference Board Report do not, however, reflect the most serious impact of this unprecedented resurgence of foreign competition on the Industry. That impact is today reflected primarily in foreign backlogs of *orders* for *imports*, as distinct from *actual* (past) imports.

This threat lies principally in the heavy electrical equipment field—specifically, heavy electrical equipment (for federal power projects, atomic energy plants and similar federal operations) ordered by the U. S. government. Previously, the Electrical Manufacturing Industry was protected from such competition by the Buy-American Act. However, solely by administrative fiat, with a view to aiding foreign nations—without regard to the impact upon the U. S. Electrical Manufacturing Industry or over-all impact on the U. S. security and economy—the protection of the Buy-American Act has been eliminated.

The following table relates to official contract awards by public agencies in the United States. It shows the increasing impact of competition from foreign manufacturers on the

heavy power equipment business in the U. S. market from 1950 through October 1953 and the indirect impact upon the basic sources of supply of electric power in the United States:

Year	Total Minimum U. S. Prices	Total Minimum Foreign Prices	Contract Awards	
			Obtained by U. S. Mfrs.	Obtained by Foreign Mfrs.
1950	$ 1,717,000	$ 1,372,000	$ 1,517,000	$ 155,000
1951	13,730,000	12,107,000	10,269,000	2,374,000
1952	19,386,000	16,933,000	11,085,000	6,843,000
1953 (10 mos.)	28,565,000	24,888,000	16,089,000	10,058,000
	$63,398,000	$55,300,000	$38,960,000	$19,430,000

Source: These data were compiled and made available by a U. S. manufacturer who filed bids for some of these orders.

The above data were compiled primarily from U. S. government (and other public sources) and made available by a U. S. electrical manufacturer. They show the actual experience of U. S. manufacturers, bidding on U. S. public business against foreign competition during 1950-53. While the business primarily represents purchases of *federal* government agencies, there is a sizeable amount involved with other government agencies, such as municipalities, public utility power districts, Rural Electrification Administration power cooperatives and a small amount with private electric utilities and industrial users.

It is apparent that over the entire period, foreign competitors were awarded 50 per cent in dollar amount of the contract awards to U. S. manufacturers. The dollar amount won by foreign manufacturers increased from 11.3% of the dollar amount won by U. S. manufacturers in 1950 to 62.5% during the first 10 months of 1953. As of October 31, 1953, with respect to the dollar value of *pending* bids which had been opened, but not been awarded, the combined low bids of foreign competitors were 83.3% of the combined low bids of U. S. manufacturers.

Foreign competitors failed to obtain an even higher percentage of the business, primarily because many had had no previous experience in constructing equipment of the size and type involved or because they were unable at the time to meet all of the specifications of the superior types of equipment called for. In the great majority of cases, however, foreign manufacturers have been able to underbid U. S. manufacturers very substantially.

Expanding Competition For Third Markets—Further evidence of the growing threat to the Industry is found in the expansion of exports from Europe and from Japan to third or neutral markets during the past two years. In this connection the Conference Board Report says:

> "Competition from foreign countries for third markets has also grown much keener, especially during the past two years, and is now threatening further inroads upon United States exports of electrical equipment, particularly in South America.
>
> "For example, a comparison of European and U. S. price quotations of heavy electrical equipment, publicly opened within the past 18 months in Latin American and Asian countries, shows that, of 124 different quotations, 80 per cent were less than the United States bid."

The Board's Report also shows that, based upon a comparison of competitive bids on seven different projects, German bids ranged from 15% to 56% *below* those of the U. S. bidders. The seven bids of the German firm *averaged* 35% lower than those of the U. S. competitor.

Immediately following World War II, all industry and, particularly, the Electrical Manufacturing Industry in Europe and Japan were necessarily occupied almost exclusively in the production of machinery and equipment for rehabilitation of their bombed-out or dismantled power and other industrial plants. Consequently, their exports to the rest of the world were negligible in this early post-war period. Since 1950, however, rehabilitation has been completed, largely as a consequence of American economic and military assistance.

Having brought their over-all industrial production to, or substantially above, pre-war levels in most countries, these nations now are in a position to point their expanding and modernized productive facilities toward extending their export trade to the U. S. and other world markets. Increasingly keener competition, therefore, is inevitable, not only for neutral markets, but for the U. S. market—the largest and most rapidly expanding market for electrical products.

Evidence substantiating these conclusions as to third or neutral markets lies in the reduction in the rate of increase of U. S. exports since 1951. In fact, as the Conference Board points out, if Canada is excluded from U. S. exports for the first six months of 1953, U. S. exports to the rest of the world show an absolute decline of 7% over the corresponding period for 1952.

It is worthy of note that the equipment which replaced the bombed-out or dismantled equipment is, without doubt, much more efficient technologically than that which it replaced, giving these foreign industries a stronger competitive position in this respect over their U. S. competitors than they had in the pre-war era.

Comparative Cost Advantages Of Foreign Producers Over The U. S. Electrical Manufacturing Industry—Greater Now Than Before World War II

U. S. industries of all types, on an average, have a considerably higher productivity than, and total production cost advantages over, foreign industries. This advantage prevails primarily in the mass-production industries where large volume reduces labor costs per unit of production. It does not generally prevail in those industries where mass-production methods are not feasible and custom-built equipment is produced. The Electrical Manufacturing Industry in the United States covers all types of production—from large custom-built generating and transmission equipment, where labor content is high, to the mass-production of consumer goods where labor content is relatively low. Within the Industry, therefore, labor cost comparisons between countries will vary, depending upon the individual product involved. In the case of custom-built heavy equipment, the labor cost differential is greater than the average for the Industry. In the case of mass-produced items, it is less than the average.

Higher Labor Cost Advantages—The Conference Board Report states "foreign manufacturers of electrical products have very large labor cost advantages over United States competitors".

These labor cost advantages of the nine foreign nations covered by the Report are derived from a combination of factors—lower hourly rates of pay and lower weekly wages, a longer legal work-week, and lower over-time payments abroad than in the United States.

Comparison Of Total (Monetary) Hourly Wages And Wage Supplements—In 1952, according to the Conference Board findings, aggregate hourly wages including wage supplements, (converted into U. S. dollars at official legal rates in the nine nations covered by the Conference Board Report) "ranged only between 10 per cent of the United States wages (and supplements) in Japan to 33.0 per cent in Belgium and Sweden. In 1938, the range was from 7.3 per cent in Japan to 46.6 in Germany."

The table below, supplied by the Board, shows the ranges in hourly wage-rates (including supplements) among the nine countries in comparison with those in the U. S. for the years 1938 and 1952:

	1952	1938
United States	100.0	100.0
Belgium	33.0	34.5
Sweden	33.0	44.1
France	30.9	43.3
United Kingdom	28.0	37.0
Switzerland	23.8	33.9
Germany	22.0	46.6
Netherlands	20.7	41.0
Italy	19.6	22.7
Japan	9.9	7.3

"Wage supplements," continues the Conference Board, "have now become a significant factor in any wage comparisons among nations. For example, in France and Italy such supplements exceed one-third of the cash wages of their workers." Some of these nations furnish these wage supplements to their workers from proceeds of a special tax levied for this purpose upon all employers, but governmental refunds are made with respect to products which are exported.

It is obvious from the above data that the hourly wage differentials in the Electrical Manufacturing Industry between the United States and these nine countries *have widened substantially* in the post-war years, compared with their respective differentials in pre-war years. Only Japan, of the nine countries, had in 1952 increased its wage rates (relative to the United States) over their 1938 level. Germany has dropped sharply from her pre-war position—the *highest* wage country among the nine nations—to the *fourth lowest* in 1952.

The Lower Legal Work-Week—In most European countries, the legal work-week (before over-time payments become legally due) according to the Conference Board, ranges between 44 and 48 hours. In contrast, in Great Britain most industries operate on a 40 hour legal work-week basis, as is true in the United States, while in Japan the legal work-week approximates 49 hours.

Overtime payments abroad are not generally more than 25% above regular wages, compared with an average of 50% in the United States.

Comparative Man-Hour Productivity—A significant factor in all labor costs, however, is man-hour productivity. Foreign productivity in the post-war era is still below that of the United States in the Electrical Manufacturing Industry, as well as foreign industries in general, to a degree that cannot be properly and accurately measured.

Nevertheless, as the Conference Board Report points out, there has been a substantial increase in the man-hour productivity of the foreign electrical manufacturing industries, compared with their respective pre-war levels. *The Conference Board concludes, however, that despite higher U. S. productivity, when all labor cost factors are considered, the European and Japanese industries have greater over-all labor cost advantages than they enjoyed in the pre-war period.*

Statistical limitations make it improper and difficult accurately to compare the output per man-hour between particular industries of various nations. However, it is both proper and possible to compare the productivity *trends* over a period of time of a particular industry among various nations, where substantiating comparable data are available.

The following table, derived from data contained in the Conference Board Report, shows productivity changes in the respective Electrical Manufacturing Industries of six nations, comparing their productivity levels in certain years with those of later years for which reliable data are available:

Country	Base Year 100	1952 Level
United States	1939	154
Germany	1936	117
France	1938	126
Holland	1939	123 (1950)
Belgium	1947	130
Japan	1948	187 (1951)

Caution is again indicated in the use of these data. It is only fair to compare trends within each nation rather than productivity levels among nations, due to absence of accurate statistical information.

Over-All Production Cost Advantages—As *evidence* of possible *over-all* production cost advantages of foreign manufacturers of electrical equipment over their U. S. competitors, a recent survey—by highly qualified representatives of a leading U. S. manufacturer—of prevailing *over-all* labor rates and the *general efficiency in the use of labor*

and materials by such foreign manufacturers was released to the Conference Board for inclusion in its Report.

This survey indicates that over-all production costs of several European manufacturers for various products now range between 20% and 70% of U. S. over-all costs of the same products. In Germany, where there is a combination of relatively low wage rates, a relatively longer work-week, and a relatively higher efficiency of both labor and equipment than in the other six European countries, over-all production costs of various prodproducts of the industry were found to be only about one-third of U. S. costs.

The level of over-all industrial production— closely related to productivity—in seven of nine countries had recovered by 1952 to levels which were 33⅓% or more above their respective levels in these countries in 1938. Japan was the only exception, but even she showed a recovery of 1% above her 1938 level.

West Germany's over-all industrial production in 1952 was 44% higher than in 1936. However, her rate of production of electrical machinery and equipment in 1952 had increased nearly three times since 1936. It should be noted, however, that a substantial portion of these gains has been the result of transfers of industrial capacity from East to West Germany.

The Conference Board Report conclusively establishes beyond doubt the fact that foreign competitors enjoy over-all labor cost advantages of substantial, but varying degrees over U. S. manufacturers of electrical equipment.

The Board's data are particularly significant in that they establish a surprising, and not previously known, fact that these labor cost advantages have increased rather than decreased in the post-war years. On this subject, the Board's Report says:

> "During the post war period labor costs, as a percentage of production value, have decreased considerably more in the various foreign countries than they have in the United States. Three of the four countries for which comparison with a pre-war year is possible also show a much steeper decline for that period than does the U. S. The reason for the more rapid post war decrease in labor costs abroad is a combination of increases in productivity, which was very low at the beginning of the post war period, and in value of production, both rising considerably faster than wage rates (including wage supplements). In the United States, on the other hand, money wages and wage supplements approximately kept pace with increases in productivity and in value of output."

Based on the advantages in over-all labor costs alone to these foreign competitors—greater than pre-war—U. S. manufacturers can anticipate steadily increasing competition and more intensified drives for outlets in third markets.

These labor cost advantages alone will also permit foreign manufacturers aggressively to enter U. S. markets, unless prompt steps are taken at least to equalize these advantages—now substantially higher than in pre-war years.

Comparative Tax Advantages of Foreign Competitors

All foreign countries derive much larger percentages of their respective total revenues from duties on imports than does the United States, where duties now produce approximately only 1% of total federal revenues. Customs duties are still used abroad, not only for protective tariff purposes, but as substantial sources of revenues. Official data are not available to show the percentage of total revenues produced by duties in these foreign countries.

Revenue Sources Of Central Governments—However, in Europe a combination of *the general sales tax* (which the United States has never levied) along with excise taxes and customs duties in (fiscal) 1951 produced 42.3% of total central government revenues in Belgium, 54.9% in France, 45.1% in Germany, 39.4% in Holland, 41.2% in Sweden, 56.1% in Switzerland and 40.6% in the United Kingdom.

At the same time in (fiscal) 1951 combined taxes on individual and corporate incomes and profits produced only 49% of total central governmental revenues in Great Britain. The percentage for the other seven European nations in the Conference Board's Report ranges from 11.9% in Italy to 43.4% in Sweden. In sharp contrast, income and profits taxes in the United States produced 71% of all federal *revenues* in (fiscal) 1951.

The table below shows these data:

Revenue Resources of the Central Government of Selected Nations for (Fiscal) 1951

Country	Income Taxes	General Sales Taxes	Excise and Customs Taxes	Other Taxes	Capital Levies	U. S. (Counterpart) Grants	Other Revenues	Total
Belgium	35.5	25.2	17.1	8.4	5.0	0	8.8	100
Canada	48.9	14.8	24.7	1.1	0	0	10.5	100
France	25.6	36.4	9.5	5.8	0.1	11.3	11.3	100
Germany (West)	23.3	20.7	21.3	4.1	6.9	9.8	13.9	100
Greece	0.6	20.0*a*	*n.a.*	12.0	0.1	45.7	21.6	100
Holland	41.4	22.0	17.4	6.3	1.5	0	11.4	100
Italy	11.9	17.2	45.0	0.8	1.9	16.4	6.8	100
Portugal[1]	19.0	34.9*a*	*n.a.*	*n.a.*	0	0	46.2	100
Sweden	43.4	41.2*a*	*n.a.*	*n.a.*	0	0	15.4*b,c*	100
Switzerland[1]	31.0	56.1*a*	*n.a.*	*n.a.*	0	0	12.9*b,c*	100
Turkey[1]	46.4	31.7*a*	*n.a.*	*n.a.*	0	0	21.9*b,c*	100
United Kingdom[1]	49.0	7.3	33.3	5.6	0.1	0	4.7	100
United States[2]	70.8	0	17.5*c*	*c*	0	0	11.7*b,c*	100

[1]Fiscal 1950.
[2]These data are percentages of total revenues, not of total tax revenues.
*a*General sales tax, customs, and excise taxes combined.
*b*Other taxes and resources combined under "other revenues".
*c*Percentage of total revenues exclusive of appropriations to Federal Social Security Trust Fund.
*n.a.*Not available.

Sources: For Canada, *Statistical Summary of the Bank of Canada*; for other foreign countries, Economic Cooperation Administration Reports; for United States, Department of Commerce Reports.

Note: Comparisons of the revenues of central governments, exclusive of those of state and local subdivisions, while not comprehensive, are useful where over-all data are not available.

The Conference Board sums up the tax advantages of other nations as follows:

"Foreign nations, therefore, make up this difference in income tax receipts primarily from general sales taxes or excises which importers into these countries must absorb in addition to their own income tax costs. The general sales tax ranges from 26.4 per cent in France to 7.3 per cent in the United Kingdom.

"Consequently, foreign competitors selling into the U. S. or third markets have sharply lower tax costs than American competitors selling into their own or foreign markets."

Finally, the Conference Board adds:

"All national, state and local government receipts in the United States (mostly taxes arising directly or indirectly from the domestic operations of the economy) come to about 26% of the gross national product."

This burden on U. S. production is higher than in any other nation of the world except Great Britain where the corresponding figure is 33%. It is worth noting, however, that the percentage for the United States has risen from approximately 12% in 1929 and 18% in 1939 to the present level of 26%.

Over-All Comparative Advantages Of Foreign Competitors

These comparative tax advantages are in addition to the over-all labor cost advantages which have been fully discussed earlier. The combined labor and tax cost advantages to foreign producers of electrical products have been shown to be very considerable. They have been shown to be substantially higher today than they were before World War II.

Consequently, although U. S. manufacturers of electrical products have experienced expanded export volume and relatively low imports in the earlier post-war years, this situation, as pointed out earlier, has radically changed in the last two years. U. S. manufacturers must, therefore, anticipate an increasing loss of export markets both in European and neutral countries and increased competition in their own domestic market.

While the major concern of many U. S. electrical manufacturers relates to the protection of their domestic market, the export market for electrical products poses several interesting considerations. They face a practically certain loss of a substantial amount of present export volume in all areas. U. S. exports will tend to be restricted to those special items in which the U. S. Industry has unique engineering know-how. Even these possibilities, if fully availed of, will not prevent, in all probability, a sharp decline in the present volume of U. S. exports of electrical products which currently represent more than 4% of the Industry's total sales.

It is interesting to recall that in 1920 the Industry's export sales were 9.1% of its total sales. Revived post-war competition lowered the percentage to 5.1% in 1929. The following decade on an average showed an increase to only 6.2%. Exports (percentage) for the first 6 months of 1953 show already a decline of more than 50% from the pre-war average in 1935-39.

Comparative Tariff Rates

Since 1934, U. S. tariff rates applicable to products of the Electrical Manufacturing Industry have been reduced from their 1930 levels in varying degrees. Most of the products of the industry have suffered reductions of more than 50%. Present rates on the important products range only from 0 to 17½% (*ad valorem*).

For comparison, the following table shows the present average customs tariffs of eleven European nations, including the United Kingdom, on electrical machines and apparatus. The reader can determine at a glance the percentage of all items on which *ad valorem* rates of duty are applied within certain ranges. It will be noted, for instance, that Germany levies from 0% to 10% rates on 38% of the duty-paying items, 11% to 35% on 58% of these items and 36% or higher on 4% of such items.

Average Customs Tariffs for Electrical Machinery[1]

	RATE OF DUTY (Ad Valorem)		
	0% to 10%	11% to 35%	36% and above
Germany	38	58	4
Austria	17	73	10
Benelux	78	22	0
Denmark	94	6	0
France	10	90	0
Greece	3	82	15
Italy	0	48	52
Norway	29	71	0
Portugal	71	25	4
United Kingdom	0	100	0
Sweden	74	26	0

[1]Percentage of dutiable items within tariff range indicated.

Source: *Low Tariff Club*, published by the Secretariat-General, Council of Europe (Strasbourg, 1952).

CHAPTER III

CONCLUSIONS AND PROPOSALS FOR EFFECTIVE PROTECTION OF THE U. S. ELECTRICAL MANUFACTURING INDUSTRY

Conclusions

The U. S. Electrical Manufacturing Industry is an industry that is vital to national security—a key industry, basic to the whole U. S. economy.

The Industry provides equipment upon which the transportation, communications, power-generating and utility systems of the country, as well as all other industry, depend.

It maintains, not only the plants, labor and skills to produce this equipment, but extensive and expensive facilities to service it by repair and maintenance.

Maintaining the Industry and its productive and maintenance facilities in a strong position is vital to the economic health, to the general welfare, and to the safety, as well as to the security of the nation.

The Industry, therefore, must be protected at all costs from any force—external or internal—which might jeopardize its stability or its capacity to produce, and provide services to maintain, the equipment for generating, distributing and utilizing electric power, as well as its position on the front line of technological research and development.

The Industry—and the key items which it produces—cannot be allowed to become the subject of trading off for uncertain reciprocal advantages between nations.

The very items upon which our entire economy and our industrial mobilization base are most dependent, such as heavy power equipment, are those which have already been subjected to sharp underselling of American producers by foreign competitors.

It is obvious from the facts presented in the Report of the National Industrial Conference Board (supplemented by the Report of the Stone and Webster Engineering Corporation and the legal analysis of Donovan, Leisure, Newton & Irvine, as well as this economic analysis) that U. S. markets for products of the Industry are already in serious jeopardy—more so by far than following World War I or in the earlier years after World War II.

It is equally obvious from these Reports and this analysis that foreign competition is almost certain to become progressively more intensified and bitter in future years with respect to both U. S. exports and U. S. imports of electrical products.

While *imports* of electrical products into the United States have been only a small percentage of total sales of the Industry, they have expanded since World War II at rates sharply higher than exports. The rate of increase—compared with that for exports—has sharply accelerated in the last two years, as foreign nations have completed rehabilitation of their productive facilities and begun to seek larger markets abroad. In fact, current imports of electrical products are increasing more rapidly than the total demand for such products on the domestic markets of the United States. Therefore, these imports constitute a serious and growing threat to the Industry.

The argument might be made that the small volume of imports of such products should be no cause for great concern to the Industry. These imports, however, can undermine the price levels (resulting from a highly competitive Industry with common cost factors) on which depends its ability to support the research, development and productive strength of its entire organization.

Consequently, the elimination now of all imports of those electrical products that are essential to the national security and the industrial mobilization base of the nation—before they become substantial in volume—will avoid the grave dangers inherent in making the entire U. S. economy dependent on foreign sources.

Action *now* will prevent greater injury abroad later, when the impact of such action on foreign nations would have much more serious consequences to them.

Action *now* is further justified because (as the Report of the Conference Board and the conclusions of this analysis clearly show), the U. S. Electrical Manufacturing Industry is almost certain in the future to suffer extensive losses in its *exports* to foreign markets.

Specific Proposals For The Electrical Manufacturing Industry

The only constructive—the only safe—policy for the United States with respect to the Electrical Manufacturing Industry is the elimination of the importation into the United States of all those custom-built items, having high labor content, such as heavy electrical machinery and equipment which are vital to the U. S. economy and national security.

This objective can be effected in various ways—such as quotas or tariffs.

The philosophy of the Buy-American Act should be broadened and its administration strengthened to prohibit all federal imports of the items to which these restrictions are applicable.

The pressing need for outright elimination in the case of this type of equipment is illustrated by recent developments. The federal government has been making in recent months substantial purchases of heavy machinery and other electrical equipment from foreign sources. This practice has increased to an alarming degree. The foreign equipment, in many instances, has already been ordered for our power systems, atomic energy installations and other governmental projects vital to national defense and security. The United States cannot afford to have these vital systems and essential projects depend upon foreign sources for emergency service and maintenance. It cannot, from a security standpoint, have foreign nationals familiar with vital installations.

This policy of purchasing from abroad impairs both the continued availability of power in emergency periods and the capacity of the electric power equipment industry to provide the necessary planning facilities and skills to assure such availability.

Any attempt to compromise the present danger by continued reliance on "peril point" or "equalization of production costs" or higher tariffs would require constant upward revisions of the rates for the key products of the industry, if the threat from abroad is to be eliminated. The legal analysis prepared by Donovan, Leisure, Newton & Irvine—referred to earlier in this analysis—documents the inadequacies of these provisions.

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The acceptance of this policy with respect to heavy machinery and equipment will not foreclose the government from making selective upward or downward adjustments in tariff rates—after adequate analysis and study—on other, less strategic products of the Industry, should such a selective policy be applied generally to other industries.

It should be recognized that the most essential single element in the well-being of the free world and the promotion of its trade is a strong and productive United States of America which has the capability of sustaining and maintaining a large and expanding volume of trade, both domestic and foreign. In the light of the important place held by the electrical industry in the United States, from the standpoint of the investment in its facilities and the number of people depending upon it for a livelihood, any broad tariff policy, applied product by product, should contemplate the establishment of tariff rates at levels which will protect U. S. manufacturers from lower labor costs and the many discriminatory advantages of foreign manufacturers. This would force U. S. manufacturers to maintain a competitive position with respect to foreign producers, comparable with that which now prevails on U. S. markets among efficient and progressive domestic competitors.

Consequently, the most feasible alternative to the United States in its enlightened self-interest and the least damaging to foreign countries would be the elimination of imports of all strategic products of the Industry, with selective adjustments upward or downward for other products of the Industry.

Appendix 13

THE FOREIGN TRADE POSITION OF THE UNITED STATES AND THE ELECTRICAL MANUFACTURING INDUSTRY

INTRODUCTION

In July, 1953, the National Electrical Manufacturers Association (NEMA), the trade association representing the producers of over 90 per cent of the electrical goods manufactured in the United States, decided to have a study made on the industry's foreign trade problems.

The occasion for the study was the legislation which provided for the extension of the reciprocal trade treaties and created a Commission on Foreign Economic Policy. The decision to have a study made was based on NEMA's belief that, to the maximum extent possible, the economic problems of the electrical manufacturing industry relating to imports and exports should be divorced from emotion and prejudice and discussed on the basis of sound information.

Accordingly, the Board of Governors of NEMA commissioned the National Industrial Conference Board of New York to study the economic phases of the problem; and it commissioned Messrs. Donovan Leisure Newton & Irvine to study existing laws, regulations and administrative rulings in the field.

The Conference Board report was to include a study of the relationship of the U. S. electrical manufacturing industry to the national health, welfare, safety and security. Because it was felt that this required an engineering background in the electrical field, the Conference Board subcontracted this phase of the study to Stone & Webster Engineering Corporation.

All three organizations participating in the study were instructed to present factual conclusions only, and to make no attempt at analysis, evaluation or recommendation.

In view of this objective and factual approach, O. Glenn Saxon, Professor of Economics at Yale University, was asked to make an analysis and evaluation of the three documents and to prepare his own conclusions and recommendations as to foreign economic policy. Professor Saxon was asked to make the analysis as a recognized expert in the field, divorced from the economic impacts of day to day foreign trade problems.

The three studies by the Conference Board, Stone & Webster, and Donovan Leisure Newton & Irvine, and the analysis by Professor Saxon, contain summaries by the authors. Because the studies and the analysis are somewhat voluminous, Westinghouse Electric Corporation has collected these summaries and presents them in this booklet for the easy use and reference of those who do not wish to examine the basic background material.

THE UNITED STATES AND ITS FOREIGN TRADE POSITION AND THE ELECTRICAL MANUFACTURING INDUSTRY

A Summary Prepared By The National Industrial Conference Board Of Its Special Report Prepared For The National Electrical Manufacturers Association

The highlights of the factual data, charts, and tables of this report—a large portion of which has never before been available for general public use—may be summarized as follows:

1. The dollar value of total sales of U. S. corporations manufacturing electrical products, as well as the dollar value of both exports and imports of such products, have risen sharply in the postwar years, 1946-53 (inclusive), but at widely varying rates.

a. Total sales during the postwar years have averaged 6.6 times their average for the prewar years (1935-39, inclusive).

b. Exports have averaged in the postwar years 4.9 times their prewar average.

c. Imports have averaged in the postwar years 4.6 times their prewar average.

2. While total sales in 1952 were nine times their prewar average, imports in 1952 were twelve times their prewar average. In contrast, export sales in 1952 were only six times higher than their prewar level.

The foregoing data are expressed in tabular form below:

	Average Annual Sales Value (1935-39=100)	
	1946-52	1952
U. S. Imports	455	1210
U. S. Exports	490	630
U. S. Manufacturers' Total Sales	660	900

3. The rate of increase of imports of electrical equipment reflects the rehabilitation of foreign industry and its approach toward a surplus position.

The rate of increase in imports has accelerated significantly in more recent years, as compared with a slowing down in the growth of exports.

This divergence in trends became far more marked in 1953, as is shown by the following table:

	First Half of 1953 Over First Half of 1952 Per cent Increase
U. S. Imports	50
U. S. Exports	9

Excluding Canada, exports for the first six months of 1953 were 7 per cent below those of the first six months of 1952.

4. Competition from foreign countries for third markets has also grown much keener, especially during the past two years, and is now threatening further inroads upon United States exports of electrical equipment, particularly in South America.

For example, a comparison of European and U. S. price quotations of heavy electrical equipment, publicly opened within the past 18 months in Latin American and Asian countries, shows that of 124 different quotations 80 per cent were less than the United States bid.

5. Foreign manufacturers of electrical products have very large labor cost advantages over United States competitors. These advantages are greater now than ever before.

a. In 1952 total monetary hourly wages and wage supplements (converted into United States dollars at official exchange rates) of the nine nations covered by the survey ranged between only 10 per cent of United States wages (and supplements) in Japan to 33.0 per cent in Belgium and Sweden. In 1938, the range was from 7.3 per cent in Japan to 46.6 in Germany.

Wage supplements have now become a significant factor in any wage comparisons among nations. For example, in France and Italy such supplements exceed one-third of the cash wages of their workers.

The wage ranges for 1938 and 1952 in the nine countries were as follows:

	1952	1938
United States	100.0	100.0
Belgium	33.0	34.5
Sweden	33.0	44.1
France	30.9	43.3
United Kingdom	28.0	37.0
Switzerland	23.8	33.9
Germany	22.0	46.6
Netherlands	20.7	41.0
Italy	19.6	22.7
Japan	9.9	7.3

The wage differentials between the United States and these nine countries have widened substantially in the postwar years. Only Japan, of the nine countries, has increased its wage rates relative to the United States since 1938. Germany, as shown by the above table, has moved from her prewar position of the highest wage country among the nine nations to the fourth lowest in 1952.

b. By 1952 industrial production in seven of the nine countries had recovered to levels which were 33⅓ per cent or more above their 1938 levels. Japan was only 1 per cent above her 1938 level.

West Germany's production in 1952 was 44 per cent higher than in 1936, while her production of electrical machinery and equipment was 188 per cent above 1936, but a substantial portion of these gains has been the result of transfers of industrial capacity from East to West Germany rather than overall increases in West German production.

c. The legal work week (before overtime payments become due) ranges between 44 and 48 hours in most European countries. Overtime payments are not generally more than 25 per cent above regular wages.

d. During the postwar period, labor costs as a percentage of production value have decreased considerably more in the various foreign countries than they have in the United States. Three of the four countries for which comparison with a prewar year is possible also show a much steeper decline for that period than does the U. S. The reason for the more rapid postwar decrease in labor costs abroad is a combination of increases in productivity, which was very low at the beginning of the postwar period, and in value of production both rising considerably faster than wage rates (including wage supplements). In the U. S., on the other hand, money wages and wage supplements approximately kept pace with increases in productivity and in value of output. These factors are mainly responsible for the increased disparity in labor costs between the United States and the various European countries.

e. Statistical limitations make it impossible accurately to compare the output per man hour between particular industries of various nations. However, it is both proper and possible to compare trends in productivity of particular industries of various countries, since substantiating data are available for certain nations over certain periods.

The following table shows changes in productivity of the electrical manufacturing industries in six nations over certain years for which comparable data are available.

Country	Output per Man Hour	
	Base Year = 100	1952 Level
United States	1939	154
Germany	1936	117
France	1938	126
Belgium	1947	130
Holland	1939	123 (for 1950)
Japan	1948	187 (for 1951)

Qualified representatives of a U. S. manufacturer of electrical equipment recently made a study of prevailing labor rates and general efficiency in the use of labor and materials in that industry in seven foreign countries. This study concluded that labor costs of various electrical products in the countries ranged between 20 and 78 per cent of U. S. labor costs of the same products. In Germany, where there is a combination of low wage rates, a high work week, and efficiency of both labor and equipment, labor costs excluding relatively moderate supplements in the industry are shown to be only about one-third of U. S. labor costs.

6. Foreign exporters almost universally enjoy the benefits of many and varied kinds of both domestic and export subsidies, as well as a rather wide variety of other types of aid from their government. United States industrial producers enjoy much less assistance of this sort.

7. Postwar conditions have led to the establishment (or intensification where they already existed) of numerous import restrictions and exchange controls abroad. Many of these restraints on international trade are far more effective barriers to its expansion than are protective tariffs. Most such restraints are not practiced by the U. S. government and, where practiced, are not generally applied to the electrical equipment industry.

Since dollars in the postwar years have been, and still are, scarce in most foreign countries, such restrictions have fallen more heavily on goods offered abroad for dollars and upon U. S. exporters selling for dollars than upon foreign exporters who can sell for their "soft" (non-dollar) currencies. There has been a very considerable relaxation of many such controls and restrictions, as they apply to other currencies but relatively little as they apply to the U. S. dollar.

8. Substantial losses of foreign investment income and smaller profits from various services since World War II have tended in the postwar years to create heavily adverse balance-of-payment positions among European countries and Japan, particularly with respect to the United States. This state of affairs, due primarily to lack of multilateral convertibility of most foreign currencies, and the need for goods often available only in the United States, has led to "dollar drives" and other efforts by foreign governments to subsidize and otherwise stimulate their exports to the United States.

9. There has been a dramatic improvement, however, in almost all foreign countries over the last year and a half toward balancing off their respective dollar sales with their dollar purchases. Figures for France for 1952 were not available in time for inclusion in the report. Except for Italy and France all other seven countries (covered in the survey), whose payment balances have been causes of concern, show substantial credit balances in their current accounts for 1952 and to date in 1953.

If the "dollar gap" be defined as the excess of the dollar value of U. S. exports of goods and services over U. S. imports of goods and services, then the gap has vanished, at least for the time being. During the year ended June 30, 1953, U. S. imports for the first time since prewar days substantially exceeded U. S. exports for which we were paid. The United States has been called upon in this twelve-month period to settle these adverse accounts by deliveries of gold bullion and transfers of U. S. (dollar) bank balances and federal government bonds or other obligations.

Foreign nations nonetheless, during this twelve-month period, received economic and military aid from the U. S. in larger sums than during any previous twelve-month period since the war.

This general reversal of the world's balance-of-payment position with the United States was even more remarkable during the first half of 1953, when U. S. gold, bank balances, and government securities—earned net by other nations—would have more than paid for all economic aid extended by the U. S. in the period.

10. Qualified opinion differs as to the probable durability of this dramatic change, but there is substantial support for the view that this improvement in balance-of-payment positions now rests on more solid foundations than did a similar improvement in 1950, after which conditions were rendered highly abnormal by the outbreak of war in Korea.

11. To a major degree the postwar progress abroad has been due to U. S. aid, but full credit should be given to those nations which have adopted policies that have been successful in ending inflation, expanding production, and reducing restraints on domestic and foreign trade.

Germany is now outstripping all others in return to normal peacetime operations, despite loss of East Germany.

Replacement of bombed-out and dismantled machinery and equipment in Germany and Japan has given these countries more technologically efficient industrial plants than they had prewar. Because of their more efficient industrial plants, trade taking the place of aid might well benefit Germany more than any of our World War II Allies. However, both Germany and Japan must expand their exports outside the Iron Curtain or they will be forced to do so inside that Curtain to support normal employment and feed their peoples.

12. In all foreign countries, duties on imports produce much larger percentages of their respective total revenues than they do in the United States, where customs duties produce approximately one per cent of total federal revenues, compared with sharply higher percentages of total revenues produced by import duties in most foreign nations. In 1951 the combined individual and corporate income taxes produced 71 per cent of total federal revenues in the United States, while abroad no nation collected more than 49 per cent and the majority collected not more than 35 per cent on an average from their income taxes—France only 25.6%; West Germany, 23.3%; Italy, 11.9%; Switzerland, 31.0%; and the United Kingdom, 49.0%. All national, state and local government receipts in the United States (mostly taxes arising directly or indirectly from the domestic operation of the economy) come to about 26% of gross national product.

Foreign nations, therefore, make up this difference in income tax receipts primarily from general sales taxes or excises which importers into these countries must absorb in addition to their own income tax costs. The general sales tax ranges from 36.4 per cent in France to 7.3 per cent in the United Kingdom.

Consequently, foreign competitors selling into the U. S. or third markets have sharply lower tax costs than American competitors selling into their own or foreign markets.

13. In summing up:

a. The wage differentials in postwar years between U. S. electrical equipment manufacturers and their foreign competitors have broadened compared to prewar years.

b. Domestic and export subsidies and aids by foreign nations exceed those enjoyed by their U. S. competitors. In the postwar years, the differentials in this respect have substantially increased.

c. There has been an increase in the number, and intensification in the use, of various types of exchange controls and other restraints on foreign trade since World War II which discriminate against the United States.

d. The so-called dollar gap in foreign balance-of-payment-positions has disappeared in the last 18 months. It has been replaced by a dollar surplus.

e. Because of Germany's more efficient industrial plants, trade taking the place of aid might well benefit Germany more than our World War II Allies.

f. Foreign competitors selling into their own, U. S., or third markets have sharply lower tax costs than U. S. manufacturers selling in their own or any foreign market.

THE UNITED STATES ELECTRICAL MANUFACTURING INDUSTRY AND ITS RELATION TO THE SECURITY, HEALTH, SAFETY AND WELFARE OF THE COUNTRY

A Summary Prepared By Stone & Webster Engineering Corporation Of Its Special Report Made For The National Electrical Manufacturers Association

The conclusions contained in this report of Stone & Webster Engineering Corporation as to the dependence of the security, health, safety and welfare of the United States upon the use of domestic-built electrical products have been summarized by Stone & Webster as follows:

THE ELECTRICAL INDUSTRY IN THE UNITED STATES AND ITS PLACE IN THE U. S. ECONOMY

The economy of this country, its great productivity and high standard of living, is dependent upon electric power and the proper equipment to use it. The extraordinary development of the U. S. economy has been made possible by the U. S. electric utility industry expanding its capacity and by the U. S. electrical manufacturing industry developing and producing the equipment for generating, transmitting and distributing electric power and for using it effectively and economically.

From 1946 through 1955, the electrical industry will have produced and put in service more electrical equipment than in the previous 70-odd years of its history. The generating capacity scheduled to be in place by 1955 will be more than double the 1946 capacity.

The continuous and uninterrupted supply of adequate electric power is essential to the industrial, agricultural and domestic economy and health of this country. Without such power the expansion of industry, the growth of agriculture and the improvement in the standard of living which have taken place would not have been possible.

RESEARCH, DEVELOPMENT AND SERVICES PERFORMED BY THE U. S. ELECTRICAL MANUFACTURING INDUSTRY

The great progress made in the United States in the use of electricity is due to the recognition of the great potential of this form of energy by users and producers of electrical equipment and their continuous cooperative effort to develop the equipment necessary to realize this potential.

There is intense competition among U. S. manufacturers to develop new and better equipment. This continuous development is accomplished with the funds of private companies, without government subsidy.

Standards for equipment are established which maintain that high degree of reliability and high quality of electrical service accepted as commonplace in this country.

Progress in establishing international standards has been slow as U. S. representatives, at meetings held for this purpose, have refused to lower U. S. standards and European representatives, seemingly content with their lower standards, have declined to raise their standards to our level.

The research, development and planning service so essential to the continuing expansion and increased availability of power in the United States is supported by the sale of electrical products. Such service is not available in this country from others than the U. S. electrical manufacturing industry. Foreign manufacturers do not incur a proportionate share of the cost of this research, development and planning service and are therefore in a favorable position in competitive bidding if price alone be considered.

Comparative Aspects of U. S. and Foreign-Built Equipment. U. S. built equipment generally is capable of operating above capacity. This was a significant factor in the outstanding performance of U. S. industry during World War II.

It is the generally accepted opinion of engineers in the United States that foreign manufactured equipment does not have the capacity or reliability of equipment furnished by U. S. manufacturers.

Maintenance Service by the U. S. Electrical Manufacturing Industry. The U. S. electrical manufacturing industry undertakes the installation, maintenance and servicing of its products throughout the country. For this purpose, it maintains an extensive field service organization of highly skilled specialists in all types of electric products whose activities include, among other things, installation, preventative maintenance and repair of equipment.

The ability, knowledge and skill of these field forces has established the general reputation of U. S. built equipment for efficient operation to full capacity promptly following its installation without long "shake-down" periods during which realignment and readjustment of parts and components are made. Standards prevailing in this aspect of the work compare with those for the production itself.

It is not uncommon for one U. S. manufacturer to maintain or repair products of another. This derives from the development of more or less common standards in this country and the familiarity which each manufacturer has with the products of his competitors. American maintenance and production methods are sufficiently standardized to permit this practice.

A corresponding ability by U. S. manufacturers to maintain or repair foreign-built equipment does not exist for a number of reasons, including differences in basic design and manufacturing practices.

In the event of war or other disaster, the burden for maintenance and repair would, in all probability, rest solely upon the U. S. electrical manufacturing industry. The delays which could be expected if any material amount of foreign-built equipment were installed may be anticipated as a result of numerous unsatisfactory experiences with foreign-built equipment in Latin-American countries in World War II.

Installation of large electrical units involves intimate knowledge of the entire electrical system by the manufacturer. This is significant when it is recognized that these units are the heart of utility and industrial systems and of many highly classified military and governmental installations, and when the possibilities of sabotage and bombing with this intimate knowledge in the hands of foreign nationals are considered.

The Disaster Service Record of the U. S. Electrical Manufacturing Industry. The U. S. electrical manufacturing industry has assumed important responsibilities in emergencies, such as the disasters caused by flood, fire and explosion.

There have been many such disasters for which the electrical manufacturers have mobilized personnel, equipment and materials from their many facilities and field organizations, often pursuant to previously developed disaster plans.

It is evident that foreign manufacturers could not render an equivalent service.

In such disasters as the Eastern Seaboard Hurricane of 1938 or the Kansas City Flood of 1951, not only was the economy of the stricken area seriously affected, but also the economy of many others depending on the area. The ability of the industry to assemble trained personnel from all over the country and to make its facilities available was invaluable in minimizing the effect of the disaster and restoring the economy and life of the area with relatively limited delay. The great distances between manufacturing plant and site location of equipment and the absence of large service forces available for concentration in a given area would, if foreign-built equipment were involved, have resulted in a substantially longer disruption of local life and economy and substantially greater financial and economic losses than actually occurred.

EXPERIENCE WITH ELECTRICAL EQUIPMENT PURCHASED FROM FOREIGN MANUFACTURERS

Experience with equipment of foreign manufacturers, drawn from instances in which U. S. electrical manufacturers were asked to service, replace, or rebuild such equipment, clearly indicate the hazards of purchasing essential equipment from foreign manufacturers. There have been many instances documenting this conclusion in Latin-American countries.

The U. S. power supply could face serious emergencies arising from substantial delays and expense in overhauling and replacement of foreign-built equipment and in adapting U. S. designed equipment for use with foreign equipment if it is dependent upon such foreign-built equipment.

POSSIBLE EFFECTS OF INTRODUCTION OF FOREIGN-BUILT EQUIPMENT IN THE UNITED STATES

The experience with equipment and service provided by foreign manufacturers, particularly at times of stress such as war, indicates that they cannot be depended upon to deliver essential equipment as needed nor to service that equipment after it is installed. For a number of reasons, including differences in basic design, manufacturing practices and specifications, it would be difficult for electrical manufacturers in the United States to repair or service such equipment.

If very much essential electrical equipment is purchased from foreign manufacturers for installation in the United States some reduction in the rates of expansion and the rate of operation of American industry and of agricultural and civilian utilization of electric power can be expected.

Conclusions Prepared By Messrs. Donovan Leisure Newton & Irvine To Their Special Study For The National Electrical Manufacturers Association

The foregoing study reveals that there exist in the United States today two policies which were adopted at different times by the Congress and the Executive Branch of our Government to promote radically different objectives. One is the historic policy of maintaining and improving the American standard of living by erecting tariff barriers and encouraging domestic consumption of American goods by such laws as the Buy American Act. The other is the policy to insure the security of the United States by strengthening its allies. It is hoped to accomplish the objectives of this policy by removing, to as large a degree as possible, our restrictions on the importation of foreign products. It finds its expression in the slogan "Trade not Aid."

The fact disclosed by our analysis of applicable legislation is that the American standard of living has in the past been protected by artificial barriers against the impact of cheap foreign labor. The principal factual question which this study poses is, to what extent will the removal of these barriers jeopardize the American standard of living?

In the years immediately following World War II, the second of the two policies had little effect on domestic industry because foreign producers were in no condition to make serious attempts to capture the American market. Today it is a different story and resurgent foreign industry may pose a serious threat to any American industry in which labor is a large factor of cost.

Prior to the war, American industry to a considerable extent was protected from ruinous foreign competition by then existing legislation. The Buy American Act was an effective instrumentality for protection because the administratively adopted 25% cost differential really meant something. Since the policy of "Trade not aid" was not in existence, there was no pressure on agency heads to ignore the cost differential and base awards on public interest considerations. Moreover because of the absence of inflation the 25% differential could have been a fair measure of the differences between foreign and domestic costs. The impact of the Reciprocal Trade Agreements Act of 1934 was not severe. Trade agreements with competitive countries were not consummated until late in the thirties and their significance was soon eliminated by the outbreak of war in 1939.

Now, of course, the situation has radically changed. We have seen how post-war trade agreements have substantially reduced the rates established by the Tariff Act of 1930 and pre-war trade agreements and we have noted the manner in which the policy of "trade not aid" is overriding the protection hitherto afforded by the Buy American Act.

All this leads to the question of what legal procedures can affected industry now follow to protect itself. Unfortunately the answer must be that very little, if anything, can be done under existing conditions. Our study has shown that there can be little hope of success if one attempts to obtain relief by invoking the "Escape Clause" or "Peril Point" procedures of the Reciprocal Trade Agreements Act.

If the cost of a domestic product exceeds that of a foreign product by more than 25%, the domestic product is automatically out. If the cost differential is less than 25%, the domestic product still may be eliminated if the agency head decides that it would be in the public interest to award the contract to the foreign producer. Despite any criteria which may be established, it would seem safe to say that only the strongest considerations of defense and security will override the policy of encouraging foreign imports.

There exists no appeal from the adverse ruling of an agency head except to public opinion, which at present seems largely sympathetic to the policy of "trade not aid."

A Condensed Summary Prepared by O. Glenn Saxon From His Analysis Of The Studies Of The National Industrial Conference Board, Stone & Webster Engineering Corporation And Messrs. Donovan Leisure Newton & Irvine

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THE PRESENT TARIFF STRUCTURE OF THE UNITED STATES

The tariff structure of the United States, on an average, has been reduced 71% from its 1930 level. Today, the United States stands *seventh* from the bottom of the list of 45 nations in degree of tariff protection. No industrial nation today has as low a tariff structure on the average as the United States. Any further over-all substantial reduction in rates would, in effect, put the United States on a basis of international free trade—without reciprocity from the rest of the world.

From the point of view of the United States, the Reciprocal Trade Program has been a failure. It has not been responsible for the subsequent expansion in international trade nor has it produced reciprocal benefits in exchange for those granted other nations. It has not been effective in reducing trade barriers and discriminatory practices against the United States. Nor did it expedite recovery from the depression in the years between the two World Wars.

Offensive And Defensive Weapons In International Trade

In the years between the wars, foreign nations developed many new and more effective barriers on international trade than had existed prior to World War I. They included minimum export prices, export duties, and export subsidies of various kinds (direct and indirect), as well as discriminatory subsidies and foreign exchange controls to stimulate exports. These nations also engaged in competitive currency devaluations to leap over tariff barriers.

They likewise developed import embargoes, quotas, and licenses; exchange controls, licenses, and quotas; higher protective tariffs; and domestic subsidies for home-grown products (which could be imported at lower prices). The various quotas, licenses, and controls were administered on a discretionary and discriminatory basis against exports from the United States, Germany and Japan.

As one nation adopted a new offensive weapon to expand its exports, other nations followed suit, while those nations whose markets were threatened developed new weapons of defense. The result was that each device, offensive or defensive, became the weapon for an increasingly intensive, competitive and retaliatory cut-throat warfare for the constricted trade of the world. Consequently, foreign trade was reduced to lower levels than otherwise would have prevailed.

The U. S. Position On Unfair Practices In Foreign Trade

The United States, prior to 1929, had never engaged in the various monopolistic and restrictive devices, exchange controls, export and import subsidies, commodity control

schemes and the like that have prevailed in international trade since World War I. It had relied solely upon protective tariffs as a defensive weapon against them. Since 1934, however, despite the Reciprocal Trade Program, we have adopted a few of these devices. Wherever used, however, they have not been extensively practiced. They have been applied chiefly to protect and support our domestic agriculture.

Effects Of World War II On International Trade And Finance

During World War II, the United States made net grants to its Allies of more than $40 billion and loans of $715 million. Between July 1, 1940 and June 30, 1953 the United States made free net grants of $71.9 billion and loans of $10.7 billion.

Due to the more liberal policy of the U. S. government in World War II and to expanding populations in European nations, in 1952 the total and per capita debts of the Allied Nations growing out of World War II are lower than their respective total and per capita debts growing out of World War I. Considering only the *principal* of the World War II debts, they now range between $42 per capita (Italy) and $93 per capita (Great Britain). This is in sharp contrast to the total per capita debt of the people of the United States to their governments (federal, state and local) of $1,840 in 1952.

Of this total, $1,651 constitutes the per capita debt of the American people to the federal government, of which $450 (per capita) represents the $71.9 billions of free grants made by the United States to foreign nations between July 1, 1940 and June 30, 1953.

Inconvertible Currencies

The current situation in Europe has resulted in an effort by nations of Western Europe and Great Britain to balance off on a bilateral basis their dollar commitments with the United States by their dollar sales to the United States. This could not be done in the early post-war years. Even if this balancing could be done *now*, with their recovery of industrial production—primarily as a result of U. S. economic aid—it *should not be done* because the natural and pre-war markets of these nations were not in the United States, but in other world areas.

The mere statement of this problem leads to the conclusion that a further reduction in U. S. tariff rates will not solve the problem. The only solution which will reestablish international trade, stabilize it and allow it to expand will be the mutual convertibility of all national currencies into gold as soon as practicable and, in the meantime, into dollars which since the end of World War I have remained convertible into gold by foreign nations and their central banks.

As the United States reduces and eventually eliminates its economic aid to Europe, if it should open U. S. markets widely to Europe and Great Britain, we may make it impossible for international trade and finance ever to become stabilized on a multilateral basis.

The most effective action would be the repulsion by the United States of all efforts in that direction and an insistence that foreign nations regain their pre-war markets in

other world areas, service them as they have in the past, accept the currencies of those areas and encourage them to return to the international gold standard, or dollar convertibility until that is possible. Meantime, the United States can best serve third nations by maximizing its imports of raw materials from them and minimizing its exports to them, encouraging them to buy from their pre-war sources of supply.

U. S. Capital Exports

The threat or likelihood of withdrawal of U. S. economic aid has raised throughout Europe and even in the United States a demand for sharp reduction in U. S. tariffs and "freer", if not free, trade on the part of the United States under the slogan "trade, not aid". This concerted drive is based upon the misconception that a creditor nation must under all circumstances maintain import merchandise balances, if it hopes to secure repayment of its private and governmental loans and investments abroad. This fallacy is based upon Great Britain's pre-war experience when her large import balances were counterbalanced by income from large investments abroad.

The United States is in few respects in a position similar to that of Great Britain. The American economy is the most productive economy in the world and can produce at competitive prices both agricultural and industrial products for world markets, while maintaining the highest living standards for its own people. Export merchandise balances can be continued for an indeterminable period by a creditor nation, such as the United States. The excess of exports over imports can be counterbalanced by other services, such as shipping, insurance, tourist expenditures, immigrant remittances and the like, though the most important offsetting factor is the continuation of foreign investments by American nationals at a sufficient annual rate to overcome deficits in balance of payments position that may otherwise accrue.

The United States has today the largest reservoir of capital savings of any nation in history available to foreign nationals and their governments on exactly the same basis as capital is available to American enterprises. There is no need of continuation of U. S. government loans or grants abroad as long as foreign nations and their nationals can borrow at the lowest rates of interest ever enjoyed on free markets in history.

All that they need do is to offer the same collateral security, the same mortgage protection, and the same terms as American enterprises offer and establish the same reputation for moral and financial integrity. All that they need do to clear the decks for this action is to assure American investors that their investments will not be nationalized for a reasonable length of time and then only with adequate compensation. The U. S. State Department through diplomatic channels and from other trading posts can expedite such assurances.

It is worthy of note that since 1945, U. S. private investments abroad have expanded 40%, despite chaotic conditions and confiscations in various nations. There is every reason to believe that, if conditions continue to improve and assurances against confiscation are given, these investments could easily expand sufficiently to counterbalance export merchandise surpluses for an indeterminate period.

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In fact, merely through continuation and moderate expansion of foreign investments, the United States can continue to enjoy merchandise export balances for a minimum of one or two decades and even longer under existing capital shortages throughout the rest of the world. This course will not disrupt international balances of payments so long as annual capital exports equalize any annual balance of payments due the United States on all other international accounts. Such a period of grace in the present chaotic political and economic conditions throughout the world will give it additional time in which to attempt to resolve the cleavages, political, ideological and economic, which now divide the world into two hostile camps.

Under these circumstances and particularly in light of the remarkable, even dramatic change in the balance of payments position of Great Britain and most European nations within the last two years—discussed in the Conference Board's Report—it would be a serious mistake for the United States at this time to enact a sharp and overall reduction in its tariff structure.

Conclusions

The conclusions from this review of debts of foreign nations to the United States, the offensive and defensive weapons in international trade and their relation to the problem of free or "freer" trade on the part of the United States can be best summarized by the following statement:

> "Advocates of a radical revision of United States tariffs or of unilateral adoption by the United States of free trade fail to recognize that tariffs are only a minor factor under present chaotic conditions of world trade and finance and current international monetary instability. Total, unilateral, and immediate elimination of all United States tariffs would accomplish little in our efforts to stabilize international trade relations in the western world or restore its economic balance on a multilateral basis.
>
> "So long as international trade, financial, and monetary relations are dominated by socialistic theories of managed currencies, compensatory spending, unbalanced budgets, monetization of public debts, competitive currency devaluations, arbitrary and discriminatory exchange controls, inconvertibility of currencies, artificially maintained exchange rates among national currencies, discriminatory export and import quotas, discriminatory export and import duties, governmental fixation of minimum (monopolistic) prices on exports of major international staples, and state-trading, as well as state-financing by nations of the western world, it is utterly unrealistic to discuss tariff reductions by, or unilateral free trade for, the United States as a material factor in correction of current instabilities and imbalances in the western world. . . ."[1]

Especially since 1934, under the Reciprocal Trade Program, repeated efforts have been made to secure elimination by international agreement of the most objectionable of these trade barriers. There has been almost unanimous consent, except from Russia, that they should be abandoned and agreements have been executed to that end, but always with "escape" clauses that permit the continuance of their use under various emergency conditions, real or artificial, that never end.

[1]Statement by the author of this analysis in *The Economics of Tariffs*—a Forum held by the National Industrial Conference Board, March 13, 1953.

The United States under these circumstances is fully justified in rejecting the demand that the United States accept on a unilateral basis the doctrine of free or freer trade. While the United States should be willing at all times to review its tariff structure in the public interest, at this time it should carefully reappraise the entire international situation. In view of the failure of the Reciprocal Trade Program to effect reciprocal benefits to the United States in exchange for the 71% reduction in its over-all tariff rates since 1934 —and in view of the intensification, rather than decrease in the use of both offensive and defensive weapons of unfair competitive practices in international trade by European nations which have benefitted from this program and the U. S. post-war grants-in-aid— in view of all that, the least that the United States can demand is the elimination of discriminations against the U. S. dollar and U. S. exports.

The United States should use its tariff bargaining position—or what is left of it— along with any other trading asset it may have, to encourage the British Empire and other nations to break down all discriminatory tariff and other barriers by which for years they have protected their own and their colonial areas against the products, not only of Japan and Germany in the years between the two wars, but also of the United States.

Until these discriminations are removed against all nations, neither Great Britain nor other nations can come to the United States with clean hands, demanding that we eliminate or sharply reduce our protective tariffs. This is true, not only with regard to the United States, but with regard to Germany and Japan. Both of these countries, as in the past, would look toward countries that are now under the domination of Soviet Russia for large markets for their exports. To what extent they trade behind the Iron Curtain is a matter of great military importance to the Western World and, if in the interest of the defense of the Western World, they agree to limit trade with Russia and its satellites to non-strategic exports, they should be given reasonable opportunities to make up any resulting deficiencies through larger exports to the markets of the Western World.

THE IMPORTANCE OF THE ELECTRICAL MANUFACTURING INDUSTRY TO THE U. S. ECONOMY

All production and distribution, all communictaions and transportation, as well as the living standards of the American people, are dependent upon the constant expansion of the electric power industry and the Electrical Manufacturing Industry which serves it.

In addition to its paramount importance as a direct producer of war materiel, the nation's entire mobilization base is dependent not only upon power, but also the availability of its emergency and maintenance services.

Rapid growth has been accompanied by increasingly active competition within the Industry for the domestic market.

The number of competing manufacturing establishments in the Industry has risen from 1,979 in 1939 to 4,294 in 1951.

The combined share of the Industry's annual sales volume, held by its two largest producing units, has declined from 37.6% of the total in 1936 to 27.6% in 1951.

Competitive Position Of The Industry In Foreign Trade

During and since World War II annual *exports* of the Industry's products have ranged between $400 to $600 million to support the war activity and later to help rehabilitate competitive industries abroad, as well as supply neutral markets that for years had gone unserved. *Imports* during this period remained at low levels, rising from an average of $2 million in 1936-39 to $4 million in 1946-50.

In the last 18 months the situation has undergone a rapid change.

In 1952 *total sales* of the U. S. Industry were *nine* times their prewar average and *adjusted imports* were *eight* times their prewar average. In contrast, however, *export sales* were only *six* times their prewar level.

During the first half of 1953, *competitive imports* of electrical products *exceeded* those of the *entire* year 1952 by 20%, while *exports* of the Industry during the first half of 1953 were 46% *below* total exports for the *entire* year 1952.

Total (unadjusted) imports of electrical products have soared from their average level of only $4 million in 1946-50 to $14.6 million in 1951, $17.4 million in 1952 and $41.6 million in 1953 (based on the first half year.) *In other words, total imports of electrical products in 1953 will be more than ten times their 1946-50 average and more than twenty times their 1936-39 average. At the same time exports of electrical products in 1953 will be only 50% above their 1946-50 average and less than seven times their 1935-39 average.*

As foreign competitors re-established and exceeded their prewar production levels, they first took over their own domestic markets, which the U. S. Industry had largely served between 1945 and 1950.

In addition, *with much more efficient* facilities—largely as a consequence of U. S. economic aid—*with substantially lower overall labor costs and lower tax costs than in* United States and, finally, *with various export subsidies* from their governments, foreign competitors since 1950 have been rapidly regaining their prewar markets in countries which do not have electrical manufacturing industries. *These combined advantages are considerably higher today than they were in the prewar years.*

This stronger competitive position of foreign producers will mean sharply reduced exports of electrical products from the United States to neutral markets that since 1939 have been served by the U. S. Industry.

The U. S. Electrical Manufacturing Industry is, therefore, facing not only a certain loss of a substantial part of its *export* markets, but also a serious threat of substantial losses in its *domestic* market (which has already been invaded) to foreign competitors.

Those very items upon which the U. S. economy and the entire industrial mobilization base of the nation are most dependent, such as heavy power equipment, are those which have already been particularly subjected to sharp underselling of U. S. producers by foreign competitors.

The U. S. government, despite the philosophy of the Buy American Act, has increased its purchases of this type of strategic equipment from foreign sources to an alarming degree.

Data, compiled primarily from U. S. government and other public sources, show that during 1950-53 (inclusive) foreign bidders have been awarded 50% of the dollar value of all awards to U. S. manufacturers of heavy power equipment, ordered by the agencies of the federal government and other public users of such equipment (including municipalities, public utility power districts, Rural Electrification Administration power cooperatives, and a small number of private utilities and industrial users).

The dollar amounts of the contracts won by bidding foreign manufacturers rose from 11.3% of the dollar amounts of contracts won by U. S. manufacturers in 1950 to 62.5% for the first 10 months of 1953. As of October 31, 1953, with respect to the dollar value of *pending* bids, which had been opened, but not awarded, the combined low bids of foreign competitors were 83% of the combined low bids of U. S. manufacturers.

U. S. tariff rates, *sharply reduced* in the years between the two wars, and even the more recent federal legislation, designed to protect Industry's domestic market, are proving inadequate in view of the much stronger competitive position of foreign manufacturers since 1950.

CONCLUSIONS AND PROPOSALS FOR EFFECTIVE PROTECTION OF THE U. S. ELECTRICAL MANUFACTURING INDUSTRY

The U. S. Electrical Manufacturing Industry is an industry that is vital to national security—a key industry, basic to the whole U. S. economy.

The Industry provides equipment upon which the transportation, communications, power-generating and utility systems of the country, as well as all other industry, depend.

It maintains, not only the plants, labor and skills to produce this equipment, but extensive and expensive facilities to service it by repair and maintenance.

Maintaining the Industry and its productive and maintenance facilities in a strong position is vital to the economic health, to the general welfare, and to the safety, as well as to the security of the nation.

The Industry, therefore, must be protected at all costs from any force—external or internal—which might jeopardize its stability or its capacity to produce, and provide services to maintain, the equipment for generating, distributing and utilizing electric power, as well as its position on the front line of technological research and development.

The Industry—and the key items which it produces—cannot be allowed to become the subject of trading off for uncertain reciprocal advantages between nations.

The very items upon which our entire economy and our industrial mobilization base are most dependent, such as heavy power equipment, are those which have already been subjected to sharp underselling of American producers by foreign competitors.

It is obvious from the facts presented in the Report of the National Industrial Conference Board (supplemented by the Report of the Stone and Webster Engineering Corporation and the legal analysis of Donovan Leisure Newton & Irvine as well as this economic analysis) that U. S. markets for products of the Industry are already in serious

jeopardy—more so by far than following World War I or in the earlier years after World War II.

It is equally obvious from these Reports and this analysis that foreign competition is almost certain to become progressively more intensified and bitter in future years with respect to both U. S. exports and U. S. imports of electrical products.

While *imports* of electrical products into the United States have been only a small percentage of total sales of the Industry, they have expanded since World War II at rates sharply higher than exports. The rate of increase—compared with that for exports—has sharply accelerated in the last two years, as foreign nations have completed rehabilitation of their productive facilities and begun to seek larger markets abroad. In fact, current imports of electrical products are increasing more rapidly than the total demand for such products on the domestic markets of the United States. Therefore, these imports constitute a serious and growing threat to the Industry.

The argument might be made that the small volume of imports of such products should be no cause for great concern to the Industry. These imports, however, can undermine the price levels (resulting from a highly competitive Industry with common cost factors) on which depends its ability to support the research, development and productive strength of its entire organization.

Consequently, the elimination now of all imports of those electrical products that are essential to the national security and the industrial mobilization base of the nation—before they become substantial in volume—will avoid the grave dangers inherent in making the entire U. S. economy dependent on foreign sources.

Action *now* will prevent greater injury abroad later, when the impact of such action on foreign nations would have much more serious consequences to them.

Action *now* is further justified because (as the Report of the Conference Board and the conclusions of this analysis clearly show), the U. S. Electrical Manufacturing Industry is almost certain in the future to suffer extensive losses in its *exports* to foreign markets.

Specific Proposals For The Electrical Manufacturing Industry

The only constructive—the only safe—policy for the United States with respect to the Electrical Manufacturing Industry is the elimination of the importation into the United States of all those custom-built items, having high labor content, such as heavy electrical machinery and equipment which are vital to the U. S. economy and national security.

This objective can be effected in various ways—such as quotas or tariffs.

The philosophy of the Buy-American Act should be broadened and its administration strengthened to prohibit all federal imports of the items to which these restrictions are applicable.

The pressing need for outright elimination in the case of this type of equipment is illustrated by recent developments. The federal government has been making in recent months substantial purchases of heavy machinery and other electrical equipment from for-

eign sources. This practice has increased to an alarming degree. The foreign equipment, in many instances, has already been ordered for our power systems, atomic energy installations and other governmental projects vital to national defense and security. The United States cannot afford to have these vital systems and essential projects depend upon foreign sources for emergency service and maintenance. It cannot, from a security standpoint, have foreign nationals familiar with vital installations.

This policy of purchasing from abroad impairs both the continued availability of power in emergency periods and the capacity of the electric power equipment industry to provide the necessary planning facilities and skills to assure such availability.

Any attempt to compromise the present danger by continued reliance on "peril point" or "equalization of production costs" or higher tariffs would require constant upward revisions of the rates for the key products of the industry, if the threat from abroad is to be eliminated. The legal analysis prepared by Donovan Leisure Newton & Irvine—referred to earlier in this analysis—documents the inadequacies of these provisions.

The acceptance of this policy with respect to heavy machinery and equipment will not foreclose the government from making selective upward or downward adjustments in tariff rates—after adequate analysis and study—on other, less strategic products of the Industry, should such a selective policy be applied generally to other industries.

It should be recognized that the most essential single element in the well-being of the free world and the promotion of its trade is a strong and productive United States of America which has the capability of sustaining and maintaining a large and expanding volume of trade, both domestic and foreign. In the light of the important place held by the electrical industry in the United States, from the standpoint of the investment in its facilities and the number of people depending upon it for a livelihood, any broad tariff policy, applied product by product, should contemplate the establishment of tariff rates at levels which will protect U. S. manufacturers from lower labor costs and the many discriminatory advantages of foreign manufacturers. This would force U. S. manufacturers to maintain a competitive position with respect to foreign producers, comparable with that which now prevails on U. S. markets among efficient and progressive domestic competitors.

Consequently, the most feasible alternative to the United States in its enlightened self-interest and the least damaging to foreign countries would be the elimination of imports of all strategic products of the Industry, with selective adjustments upward or downward for other products of the Industry.

APPENDIX 14

UNITED STATES TARIFF COMMISSION

FLUORSPAR

A SUMMARY OF INFORMATION ON USES, PRODUCTION, TRADE, AND SUPPLY

Industrial Materials Series
Report No. M–5

Washington, D. C.
August 1952

FLUORSPAR

FOREWORD

This report is one of a series which the Tariff Commission is preparing on selected industrial materials. The materials covered in this series are mainly raw materials which are of special interest in connection with the mobilization of the Nation's resources for defense. However, the series also includes some more advanced, or intermediate, products which are materials for further manufacture.

The general objective in each report is to present in concise form background facts bearing on the outlook for supply and demand in the years immediately ahead. The reports in this series summarize for each material salient economic and statistical information on uses, consumption, United States production, imports, and exports, and other data pertinent to United States needs and supplies. The individual reports in the series are being released as rapidly as they are completed.

In the preparation of this report the Tariff Commission had the services of Reigart M. Santmyers and Ernest Wolff, and other members of its staff.

INTRODUCTION

Fluorspar, which is the nonmetallic crystalline mineral fluorite, is the principal commercial source of the chemical compound calcium fluoride. Although the term usually applies to market grades of fluorspar that are obtained after beneficiation processes, it is also used in the trade to designate the ore from which the mineral is obtained. Commercial fluorspar is graded principally according to its content of calcium fluoride; the acid grade ordinarily contains at least 98 percent, the ceramic grade from 95 to 98 percent, and the metallurgical grade less than 95 percent—usually considerably less.

Fluorspar is an important raw material for the metallurgical, chemical, glass, and ceramic industries. The metallurgical and acid grades, which are required for the manufacture of steel, aluminum, and certain chemical compounds, are the most important types of fluorspar for essential civilian and military uses. For this reason the Munitions Board classifies these two grades of fluorspar as strategic and critical, and they are included in the list of materials currently being stockpiled.

The United States is the world's largest producer of fluorspar, but domestic consumption exceeds production. Both production and consumption have been at a much higher level in recent years than before the war. During 1946–50 production averaged about 295,000 tons a year compared with an average of 148,000 tons during 1937–39. Between these two periods, consumption increased even more than production, advancing from an annual average of 162,000 tons for 1937–39 to an annual average of about 371,000 tons for 1946–50. The greatly expanded demand resulted in very much larger imports in postwar years; in 1950 and 1951 imports accounted for 40 percent and 36 percent, respectively, of domestic consumption, compared with an annual average of 15 percent during 1937–39. Exports have always been small.

This report presents pertinent data regarding the position of the United States as a producer and consumer of fluorspar and discusses factors bearing on the outlook for United States needs and supplies in the period immediately ahead.

DESCRIPTION AND USES

Description

Fluorspar, or fluorite, is a moderately hard transparent or translucent mineral, varying in color from pure white through pink and yellow to deep purple. As noted previously, it is principally calcium fluoride.

Fluorspar occurs mostly in the form of veins. The deposits usually contain gangue (various other minerals and impurities), and the fluorspar must be sepa-

rated and classified into market grades before use. Among the minerals commonly found with fluorspar are calcium carbonate, silica, barite, galena, and sphalerite.

Commercial fluorspar is commonly classified into three market grades as follows: (1) Metallurgical grade, containing ordinarily less than 95 percent calcium fluoride and not more than 5 percent silica; (2) ceramic grade, containing from 95 to 98 percent calcium fluoride and not more than 2½ to 3 percent silica; and (3) acid grade, containing at least 98 percent calcium fluoride and not over 1 percent silica. Although these standard specifications are generally followed, they are no longer rigidly observed by the trade, and material with lower calcium fluoride content is frequently accepted. Thus, some material sold at present as acid grade fluorspar may have a minimum of 97.5 percent of calcium fluoride, and some sold as ceramic grade fluorspar may have a minimum of 92 percent calcium fluoride. All grades are generally sold in three-particle sizes known as lump, gravel, and ground fluorspar. In the United States some metallurgical fluorspar is marketed also in pellet form.

Run-of-mine fluorspar contains varying percentages of calcium fluoride and the ore is processed to produce the market grades. Formerly, the work of classifying the material into commercial grades was done by manual selection. However, most processing operations have been mechanized over the past two decades; major advances in processing resulted from the use of selective froth flotation in the middle 1930's and from the heavy media process in the middle 1940's. The improved methods of beneficiation have made it possible to recover a much larger percentage of calcium fluoride from crude ores than formerly, to control more effectively the output of market grades in accord with current demand, and to use certain ores which were formerly considered too low grade to mine.

Uses

The largest quantity of fluorspar is used in the steel industry. Ordinarily more than half of the fluorspar produced in the United States is of the metallurgical grade used chiefly as a flux in the production of basic open-hearth steel. Each ton of basic open-hearth steel requires an average of about 5 pounds of fluorspar. Small amounts of metallurgical fluorspar are used also in the manufacture of alloy steel and ferroalloys.

The second largest quantity of fluorspar is used in the chemical and aluminum industries, where the acid grade is required. Acid fluorspar is used for making hydrofluoric acid, essential to the production of artificial cryolite and aluminum fluoride, both needed in the manufacture of aluminum. It is also used in the production of aviation gasoline and for making numerous fluorine compounds, many of which are important war materials. Relatively small quantities of these compounds are required in the production of nickel and Monel metal, carbon electrodes, and calcium carbide and cyanamide; in refining lead and silver and in extracting various rare metals from their ores; in abrasives manufacture; and in the operation of municipal water-supply systems. Acid fluorspar is also used in the production of the nontoxic refrigerating medium Freon (employed in the manufacture of refrigerants and as a propellant in insecticides), and in the manufacture of carbon fluoride used to separate uranium 235 from uranium metals.

Ceramic fluorspar is used in the manufacture of opal, opaque, and colored glass, and in vitreous enamels for coating metalware and metal and ceramic tiles. Small amounts are also required in the manufacture of chinaware.

Substitutes

There are a number of substitutes for fluorspar in some of its uses in the steel and glass industries. In the steel industry, metallurgical fluorspar could be replaced as a flux by such materials as fused calcium fluoride, lime, certain salts of sodium and potassium, iron scale, topaz, bauxite, and ilmenite. During World War II several of these materials were used as a conservation measure when it appeared that the supply of fluorspar might be inadequate. In the glass industry natural cryolite, lepidolite, bone ash, and other calcium phosphates are used at times in place of ceramic fluorspar for the manufacture of opal or opaque white glass. However, most of the substitute materials are less satisfactory than fluorspar from a technical point of view, and some of them are more costly. Furthermore, fluorspar has itself replaced some minerals—notably cryolite—that are in limited supply.

There are no substitutes for acid fluorspar as a raw material for the production of hydrofluoric acid and its derivatives.

Strategic importance

Fluorspar is of strategic importance because of its use in the steel industry and in the production of hydrofluoric acid for the chemical and aluminum industries. The metallurgical and acid grades of fluorspar needed for these purposes are included by the Munitions Board among the materials listed as strategic and critical and both are being stockpiled to assure a sufficient supply for military and essential civilian needs. Ceramic fluorspar is not considered essential from a military point of view.

WORLD PRODUCTION

Estimated world production of fluorspar averaged about 570,000 tons a year during 1937–39 (see table 1). During World War II, production more than doubled, amounting to over 1.1 million tons in 1943, in response to the greatly increased demand resulting from the large expansion in the steel and aluminum industries. Output declined in subsequent years, and in 1946 it was about equal to the annual average for 1937–39. Since then world production has shown a strong upward trend, and in 1950 it amounted to about 835,000 tons.

TABLE 1.—*Fluorspar: Production, by principal countries, average 1937–39, annual 1943 and 1946–49*

[In short tons]

Country	Average 1937-39	1943	1946	1947	1948	1949	1950	1951
United States [1]	148,135	406,016	277,940	329,484	331,749	236,704	301,510	347,024
United Kingdom	42,434	60,743	52,029	49,611	78,263	74,488	56,480	([2])
Spain	7,810	39,585	9,603	15,305	33,345	68,249	36,687	61,528
Mexico [3]	([4])	24,768	24,094	50,416	83,092	61,729	73,744	74,793
Canada [5]	200	11,210	8,042	7,186	11,340	6,388	65,418	88,571
Newfoundland [5]	10,730	62,256	25,756	39,893	52,726	55,575		
France	57,320	26,632	21,203	34,828	35,274	44,041	39,754	56,150
Germany [6]	167,394	218,846	34,072	21,203	41,390	37,336	103,900	161,421
Italy	14,262	33,605	8,190	22,994	43,585	19,561	35,499	45,861
World total [7]	570,000	1,143,000	577,000	715,000	870,000	742,000	789,000	957,000

[1] Mine shipments.
[2] Not available.
[3] Exports.
[4] Not reported before 1940.
[5] Newfoundland became part of Canada Mar. 31, 1949.
[6] For 1946 and later years figures represent production only of the Western Zone, or the area covered by the Federal Republic.
[7] Figures include estimated production in China, the Soviet Union, and in other countries for which statistics are not available.

Source: Compiled from official statistics of the U. S. Bureau of Mines.

Fluorspar is produced commercially in about 20 countries. The United States usually has been the world's leading producer, and in the years immediately preceding World War II it accounted on the average for 26 percent of total world output. This percentage has been much larger since the end of the war, averaging about 40 percent for the period 1946–50.

Other important fluorspar-producing countries include the United Kingdom, Spain, Mexico, Canada (including Newfoundland), France, and Germany. Together these countries and the United States accounted in 1949 for close to 80 percent of total world production. Fluorspar is produced in substantial quantities also in the Soviet Union, but statistics are not available.

Factors relating to fluorspar production and trade in the principal producing countries are discussed further in a later section of this report.

UNITED STATES INDUSTRY AND TRADE

Consumption

The United States is the world's largest consumer of fluorspar. During 1937–39 consumption in the United States averaged 162,000 tons a year (see

table 2). Under the impetus of war, consumption increased sharply and amounted to about 410,000 tons in 1944. It declined in the years immediately after the war, but since 1947 has again shown an upward trend. Consumption reached a record high of nearly 500,000 tons in 1951, reflecting the effects of the defense program, especially the expansion in the domestic steel and aluminum industries and the increased use of those chemicals for which fluorspar is an important raw material.

TABLE 2.—*Fluorspar: United States production, imports, exports and consumption, average 1937–39, annual 1943–51*

[In short tons]

Year	Production [1]	Imports [2]	Exports	Consumption
Average, 1937–39	148, 134	24, 329	[3] 1, 407	162, 066
Annual:				
1943	406, 016	43, 768	9, 364	388, 885
1944	413, 781	87, 200	2, 063	410, 170
1945	323, 961	104, 925	1, 210	356, 090
1946	277, 940	29, 852	1, 855	303, 190
1947	329, 484	74, 766	1, 328	376, 138
1948	331, 749	111, 626	743	406, 269
1949	236, 704	95, 619	765	345, 221
1950	301, 510	[4] 164, 634	[4] 688	[4] 426, 121
1951 [4]	347, 024	181, 275	1, 093	497, 012
1952 [4]	333, 769	352, 263	675	521, 000
1953 (Jan.-July) [4]	(5)	204, 727	421	(5)

[1] Mine shipments.
[2] Includes imports free of duty for U. S. Government use as follows:

	Short tons		*Short tons*
1943	43, 003	1950	2, 720
1944	83, 903	1951	22, 732
1945	83, 018	1952	55, 281
1947	3, 959	1953 (Jan.-July)	65, 534

[3] As reported by producers to the U. S. Bureau of Mines.
[4] Preliminary.
[5] Not available

Source: Production and consumption, official statistics of the U. S. Bureau of Mines; imports and exports, official statistics of the U. S. Department of Commerce, except as noted.

Formerly almost all the fluorspar consumed in the United States was obtained from domestic sources; however, there has been a gradual depletion of the known domestic ore reserves and a decline in the average grade of ore mined. In postwar years domestic production has continued to supply most of the fluorspar used, but imports have represented a steadily increasing proportion of consumption, since total United States requirements have increased at a much greater rate than domestic production. Whereas during 1937–39 imports represented on the average about 15 percent of total requirements, for the period 1946–50 they averaged about 26 percent, and in 1951 they were 36 percent.

In the period 1937–39 metallurgical fluorspar accounted for about 73 percent of total fluorspar consumption, but since the war the proportion has declined; during 1946–50 it averaged about 58 percent. This change in relationship was not due to a decrease in the absolute quantity of metallurgical fluorspar used (which has been considerably larger than before the war), but resulted from large increases in consumption of the other grades of fluorspar, and especially in the consumption of acid fluorspar (see table 3). Whereas the quantity of metallurgical fluorspar consumed increased on the average by about 80 percent in 1946–50 over 1937–39, that of acid fluorspar increased by about 350 percent. Relative to total fluorspar consumption the proportion accounted for by acid fluorspar averaged about 27 percent for the period 1946–50, compared to 14 percent in 1937–39.

Organization and location of the industry

Fluorspar is obtained in the United States from numerous mines and so-called prospects—i. e., small mining properties that are generally worked irregularly.

TABLE 3.—*Fluorspar: United States consumption, by grades, average, 1937–39; annual, 1943–52*

[In short tons]

Year	Metallurgical grade	Acid grade	Ceramic grade	Unclassified [1]	Total
Average 1937–39	119,266	23,100	17,800	1,900	162,066
Annual:					
1943	241,408	119,397	22,318	5,762	388,885
1944	238,016	136,634	29,862	5,658	410,170
1945	204,702	111,316	35,569	4,503	356,090
1946	167,704	85,318	46,591	3,577	303,190
1947	215,962	101,259	51,068	7,849	376,138
1948	241,504	108,436	46,118	10,211	406,269
1949	209,317	90,102	36,307	9,495	345,221
1950	250,511	125,607	41,163	8,840	426,121
1951 [2]	286,002	154,449	42,241	14,320	497,012
1952 [2]	271,759	178,265	39,602	31,874	521,000

[1] Not classifiable from official data.
[2] Preliminary.

Source: Compiled from official statistics of the U. S. Bureau of Mines.

There are well over a hundred active mines and prospects, no one of which accounts for a large part of the total output. However, about 12 fairly large concerns, each operating several properties, mine most of the fluorspar produced domestically. These concerns probably account for as much as 80 percent of total production, although statistics on their output are not available. The remainder comes from a large number of single-mine enterprises under individual ownership, from small prospects, and from the treatment of tailings of previous mining operations.

All the larger mining concerns operate mechanical flotation mills at or near the mines. These mills process the output of the owning concerns and may also handle that of independent producers, either on a custom basis or through outright purchase of the ore. In addition there are several independent flotation mills which buy ore from individual mine producers or treat it on a custom basis.

The principal fluorspar deposits in the United States are along the Ohio River in southern Illinois and western Kentucy, and in an area extending from northeastern Colorado to southwestern New Mexico. Other States that have important but less developed deposits include Arizona, Nevada, Utah, California, Idaho, Texas, Montana, and Wyoming.

The domestic fluorspar deposits vary greatly in size and quality. Those in the Illinois-Kentucky district are among the largest in the world. In this area the fluorspar occurs in beds of limestone and sandstone, and in general the deposits contain appreciable quantities of lead and zinc. At some operations in this district the byproduct recovery of lead and zinc ores is very substantial, and at times such ores represent 10 percent of the total ore mined. The Illinois-Kentucky deposits are also important because they are situated close to the large consuming centers and because they are exploited with the aid of advanced mining and beneficiation technics.

Western fluorspar deposits contain little lead and zinc. They are usually in the form of complex ore that have a relatively high silica content and require more extensive processing than ores from the Illinois-Kentucky district.

Production

Production (mine shipments) of fluorspar in the United States averaged about 148,000 tons a year during 1937–39 (see table 4). It increased sharply during the war and reached a record high in 1944, amounting to nearly 414,000 tons. Production declined in 1945–46, but has been more than 300,000 tons annually in each subsequent year except in 1949; in 1951 it amounted to about 347,000 tons. The decline in output in 1949 reflected in part decreased consumption during a strike in the steel industry.

TABLE 4.—*Fluorspar: United States production (mine shipments), total and by States, average 1937–39, annual 1943–51*

[In short tons]

Year	Illinois	Kentucky	Colorado	New Mexico	All other	Total
Average 1937–39	63,096	70,554	5,719	3,750	5,016	148,135
Annual:						
1943	198,789	109,849	49,145	37,050	11,183	406,016
1944	176,259	112,791	65,209	42,973	16,549	413,781
1945	147,251	95,142	52,437	14,449	14,682	323,961
1946	154,525	63,143	32,539	17,584	10,149	277,940
1947	167,157	90,256	32,153	27,526	12,392	329,484
1948	172,561	84,889	27,698	24,968	21,633	331,749
1949	120,881	63,438	22,324	12,844	17,217	236,704
1950	154,623	80,137	18,489	20,036	28,225	301,510
1951 [1]	204,328	68,635	20,661	24,402	28,888	347,024
1952 [1]	(2)	(2)	(2)	(2)	(2)	333,769

[1] Preliminary.
[2] Not available.

Source: Compiled from official statistics of the U. S. Bureau of Mines.

By far the greater part of the domestic production comes from the Illinois-Kentucky deposits. In the years immediately preceding World War II this area supplied about 90 percent of the total output and during postwar years it accounted for about 76 percent. This decline in the relative importance of the Illinois-Kentucky district is due to greatly increased production in other sections of the country, especially in Colorado and New Mexico. Fairly substantial quantities are regularly produced also in Utah and Nevada, and smaller amounts come from Arizona, Montana, and Texas.

Table 5 shows United States production of fluorspar by grades. More than half of the domestic fluorspar produced is the metallurgical grade. During 1937–39 this grade of fluorspar accounted on the average for about 72 percent of all the fluorspar produced, compared with 13 percent for the acid grade and 12 percent for the ceramic grade. Owing to the increased use of hydrofluoric acid since 1940, the relative importance of the acid grade of fluorspar has greatly increased, while that of the metallurgical grade has declined. Of the fluorspar produced during 1946–50, the metallurgical grade accounted for about 52 percent and the acid grade for close to 30 percent. Ceramic fluorspar, however, has changed very little in relative importance; during 1946–50 it represented about 15 percent of total production.

TABLE 5.—*Fluorspar: United States production (mine shipments), by grades, average 1937–39, annual 1943–52*

[In short tons]

Year	Metallurgical grade	Acid grade	Ceramic grade	Unclassified [1]	Total
Average 1937–39	107,133	18,942	17,812	4,247	148,134
Annual:					
1943	224,207	123,680	21,050	37,070	406,016
1944	223,405	121,084	29,859	39,433	413,781
1945	189,495	80,155	35,960	18,351	323,961
1946	139,150	79,047	47,377	12,366	277,940
1947	169,866	89,667	49,559	20,392	329,484
1948	177,300	96,848	45,375	12,226	331,749
1949	122,367	70,759	32,352	11,226	236,704
1950	153,355	97,659	38,282	12,214	301,510
1951 [2]	171,181	[3] 123,125	39,392	13,326	347,024
1952 [2]	155,713	[3] 142,014	36,042	(4)	333,769

[1] Not classifiable from official data.
[2] Preliminary.
[3] Includes shipments to Government stockpile.
[4] Not separately reported; included in other grades.

Source: Compiled from official statistics of the U. S. Bureau of Mines.

Efforts to increase production

The increase in United States fluorspar production in recent years has not been large enough to meet the increase in domestic consumption. Expansion of output has been limited by depletion of the known ore reserves and a decline in the average grade of ore mined—notably in the Illinois-Kentucky district—as well as by inadequate production facilities, especially for the output of acid fluorspar. This situation has resulted in the development of a major program for expanding fluorspar production with Government assistance. The Government-aid program has two aspects: (1) The expansion of mine and plant facilities sponsored by the Defense Materials Procurement Agency, which is discussed in the last section of this report, and (2) Government assistance in the discovery and exploration of fluorspar deposits.

As was noted above, fluorspar is included in the Government-aided mineral exploration program of the Defense Minerals Exploration Administration (successor of the Defense Minerals Administration). The purpose of this program is to make Government aid available by providing some part of the direct cost of exploration projects for strategic and critical metals and minerals. For any approved mineral-exploration project the Government will contribute 50 to 90 percent of the direct cost, depending upon the mineral. The Government's contribution is repayable by means of a percentage royalty on the net return from any ore, concentrates, or metal produced within 10 years from the date of the contract as a result of the exploration project. Such payments are to be made either "until the total amount contributed by the Government, without interest, is fully repaid, or until said 10 years have elapsed, whichever occurs first."[1] Any project which is estimated to require more than 2 years to become productive will be approved only if justified in the opinion of the Administrator of the Defense Minerals Exploration Administration. Under this program the Government will contribute 50 percent of the direct cost of exploration of fluorspar deposits. To date (July 1952) there have been 15 requests for Government assistance, of which 3 have been approved.

UNITED STATES IMPORTS

Tariff status

Present United States tariff rates and import statistics on fluorspar cut across the lines of the commercial grades. They distinguish only two classifications: Fluorspar containing more than 97 percent calcium fluoride (which includes all of the acid grade and some of the ceramic grade), and that containing not more than 97 percent of calcium fluoride. Table 6 shows the rates of duty on fluorspar in the Tariff Acts of 1922 and 1930 and the rates in effect in 1952.

The Tariff Act of 1922 provided for a duty of $5.60 per long ton on all grades of fluorspar. At the time this legislation was under consideration domestic production consisted almost entirely of metallurgical fluorspar, which is used in steelmaking. In 1928, after an investigation by the United States Tariff Commission under section 315 of the Tariff Act of 1922 (the so-called flexible-tariff provision), the duty on metallurgical fluorspar was increased by Presidential proclamation to $8.40 per long ton, the duty on the other grades remaining at $5.60 per ton. The Tariff Commission's finding and the Presidential proclamation defined metallurgical fluorspar, subject to the increased duty, as material containing not more than 93 percent of calcium fluoride. Subsequently, however, foreign producers sent to the United States large quantities of fluorspar for metallurgical use with a calcium fluoride content that was slightly over 93 percent, and these imports were permitted entry at the lower rate of duty.

In the Tariff Act of 1930 the Congress applied the rate of $8.40 per long ton to all fluorspar containing not more than 97 percent of calcium fluoride, the duty remaining at $5.60 per long ton on material with higher calcium fluoride content. Although the unit value of fluorspar containing more than 97 percent of calcium fluoride was considerably greater than the unit values for all other grades, the lower duty was made applicable to the higher valued material on the basis that imports of the lower grade of fluorspar were at that time in more direct competition with the fluorspar of this same grade produced by the domestic industry. Since then, however, improved methods of beneficiation have made possible a very large domestic production of fluorspar containing more than 97 percent of calcium fluoride.

[1] DMEA Order–1, Government Aid in Defense Exploration Projects (17 Federal Register 2090, Mar. 11, 1952).

The statutory duties on fluorspar have been reduced as a result of trade-agreement action. Effective January 1, 1939, the rate of duty on fluorspar containing more than 97 percent of calcium fluoride was reduced to $4.20 per long ton under the trade agreement with the United Kingdom, and the reduced rate was bound in the trade agreement with Mexico, effective January 30, 1943. Owing to termination of the trade agreement with Mexico, effective December 31, 1950, the rate in effect from January 1, 1951 to June 5, 1951, inclusive, was $5.60 per long ton. On June 6, 1951, the rate on the same quality of fluorspar was reduced to $2.10 per ton, the present rate, pursuant to the General Agreement on Tariffs and Trade (Torquay).

In 1943, pursuant to the trade agreement with Mexico, the rate on fluorspar containing not more than 97 percent of calcium fluoride was reduced to $6.30 per ton. On January 1, 1951, this rate was increased to the statutory rate of $8.40 per ton, following termination of the trade agreement with Mexico; this rate continues to be the effective rate on fluorspar containing not more than 97 percent of calcium fluoride.

TABLE 6.—*Fluorspar: United States rates of duty in the Tariff Acts of 1922 and 1930, and rates in effect in 1953*

Tariff class	Tariff rate in—		
	Act of 1922	Act of 1930	1953
Par. 207.—fluorspar:			
Containing more than 97 percent of calcium fluoride.	$5.60 per long ton; ($5 per short ton).	$5.60 per long ton; ($5 per short ton).	$2.10 per long ton;[1] ($1.875 per short ton).
Containing not more than 97 percent of calcium fluoride.	$5.60 per long ton.[2] ($5 per short ton).	$8.40 per long ton; ($7.50 per short ton).	$8.40 per long ton.[3] ($7.50 per short ton).

[1] Rate reduced to $4.20 per long ton in the trade agreement with the United Kingdom, effective Jan. 1, 1939, and the reduced rate bound in the trade agreement with Mexico, effective Jan. 30, 1943. Rate was reduced to $2.10 per long ton in the General Agreement on Tariffs and Trade (Torquay), effective June 6, 1951. Owing to the termination of the trade agreement with Mexico, effective Dec. 31, 1950, the rate in effect from Jan. 1, 1951, to June 5, 1951, inclusive, was $5.60 per long ton.

[2] Rate of fluorspar containing not more than 93 percent of calcium fluoride was increased to $8.40 per long ton, by Presidential proclamation, effective Nov. 16, 1928, under sec. 315, Tariff Act of 1922.

[3] As a result of the trade agreement with Mexico the rate in effect from Jan. 30, 1943, to Dec. 31, 1951, was $6.30 per long ton.

The ad valorem equivalents of the specific duties on the two import classifications of fluorspar differ widely, owing both to the price differential between the two classes and to the higher duty on the lower grade material. The disparity in ad valorem equivalents was much greater before World War II than in the postwar years, largely because in the earlier period the average unit value of imports containing over 97 percent of calcium fluoride was generally 2 to 3 times as high as that of the imports containing 97 percent or less. The more effective beneficiation processes subsequently put into use have made it easier to convert lower grade material into higher grade, and the price differential between the two classes of imports has been materially reduced. The following tabulation shows the ad valorem equivalents of the specific duties for dutiable imports in the years indicated:

Tariff class	1939	1946	1948	1949	1950	1951	1953
Fluorspar:							
Containing more than 97 percent of calcium fluoride	*Percent* 15.9	*Percent* 15.6	*Percent* 14.3	*Percent* 15.6	*Percent* 16.0	*Percent* 10.5	*Percent* 4.3
Containing not more than 97 percent of calcium fluoride	99.5	36.5	39.8	40.0	44.6	43.8	37.6

While the reduced duties in trade agreements have tended to encourage imports, the levels of the duties and changes in the rates have not been the major factors affecting the increased volume of imports over the past decade. Imports have increased in this period largely in response to greatly expanded United States requirements, which the domestic industry under existing conditions has not been able to supply.

TABLE 7.—*Fluorspar: United States imports for consumption, by tariff classes, average 1937–39, annual 1943–51* [1]

Year	Containing more than 97 percent of calcium fluoride	Containing not more than 97 percent of calcium fluoride	Total
	Quantity (short tons)		
Average 1937–39	7,605	16,724	24,329
Annual:			
1943	1,854	41,915	43,769
1944	5,562	81,638	87,200
1945	10,275	94,650	104,925
1946	6,621	23,231	29,852
1947	15,623	63,102	78,725
1948	20,196	91,430	111,626
1949	20,490	75,128	95,618
1950 [2]	43,488	121,146	164,634
1951 [2]	52,991	128,284	181,275
1952 [2]	127,751	224,512	352,263
1953 (January to July) [2]	115,149	89,737	204,886
	Foreign value (1,000 dollars)		
Average 1937–39	144	143	287
Annual:			
1943	24	603	627
1944	153	1,527	1,680
1945	255	1,968	2,223
1946	159	358	517
1947	347	910	1,257
1948	531	1,294	1,825
1949	493	1,056	1,549
1950 [2]	1,050	1,529	2,579
1951 [2]	1,809	2,211	4,110
1952 [2]	5,774	4,745	10,518
1953 (January to July) [2]	4,976	1,754	6,730
	Unit value (per short ton) [3]		
Average 1937–39	$19.01	$8.54	$11.81
Annual:			
1943	12.75	14.40	14.33
1944	27.59	18.70	19.27
1945	24.80	20.79	21.18
1946	23.99	15.41	17.31
1947	22.18	14.43	15.96
1948	26.31	14.15	16.35
1949	24.07	14.05	16.20
1950	24.15	12.62	15.67
1951	35.84	17.24	22.67
1952 [2]	45.19	21.13	33.49
1953 (January–July) [2]	43.21	19.55	32.85

[1] For 1943 and several later years, statistics include imports entered free of duty for U. S. Government use. See table 8.
[2] Preliminary.
[3] Calculated on exact, i. e., unrounded figures.

Source: Compiled from official statistics of the U. S. Department of Commerce.

In the period 1937–39 imports of fluorspar averaged about 24,000 tons annually, valued at $287,000 (see table 7). Imports increased substantially during the war, and more than doubled between 1943 and 1945; in the latter year they were 105,000 tons, valued at $2.2 million. Postwar imports have continued to be greatly above the prewar level and in the years 1948–51 exceeded the wartime imports. They reached a record high in 1951, amounting to more than 181,000 tons valued at $4.1 million. The bulk of the wartime imports entered free of duty for the account of the United States Government. Duty-free imports have continued in postwar years, but the quantities have been much smaller than during the war (see table 8).

TABLE 8.—*Fluorspar: United States imports entered free of duty for U. S. Government use, by tariff classes, specified years 1943–53*

Year	Containing more than 97 percent of calcium fluoride	Containing not more than 97 percent of calcium fluoride	Total
	Quantity (short tons)		
1943	1,494	41,509	43,003
1944	4,472	79,431	83,903
1945	7,498	75,520	83,018
1947		3,959	3,959
1950 [1]	2,720		2,720
1951 [1]	22,099	633	22,732
1952 [1]	44,585	10,696	55,281
1953 (Jan.–July) [1]	61,246	4,288	65,553
	Foreign value (1,000 dollars)		
1943	18	597	615
1944	127	1,487	1,614
1945	193	1,606	1,799
1947		42	42
1950 [1]	94		94
1951 [1]	929	26	955
1952 [1]	2,166	481	2,647
1953 (Jan.–July) [1]	2,815	216	3,031

[1] Preliminary.

Source: Compiled from official statistics of the U. S. Department of Commerce.

Imports have consisted mostly of fluorspar containing not more than 97 percent of calcium fluoride (see table 7), and those entering in this tariff class are believed to be virtually all of the metallurgical grade. Before World War II, imports of metallurgical fluorspar accounted ordinarily for about 70 percent of total imports. During the war the proportion represented by this grade rose to more than 90 percent, and it has averaged about 76 percent in postwar years. Very little, if any, ceramic fluorspar is imported, and the remaining imports consist almost entirely of acid fluorspar. Imports of acid-grade fluorspar, in terms of quantity, have increased more than threefold between 1947 and 1951; they were much greater throughout this period than in earlier years.

Sources of imports

In prewar years Germany, France, and Newfoundland were the principal suppliers of United States imports, but during the war Mexico, Spain, and Newfoundland were practically the only sources. Mexico has continued to be the main supplier in all postwar years. Other large suppliers in 1951, arranged in order of importance, were Germany, Spain, Canada (which now includes Newfoundland), and Italy (see table 9). All of the countries supply both metallurgical and acid fluorspar, although metallurgical fluorspar predominates in the shipments from all countries except Canada. Imports from Canada consist mostly of acid fluorspar.

UNITED STATES EXPORTS

Exports of fluorspar were first reported in United States trade statistics in 1942, although before that time the United States Bureau of Mines regularly published export data from information supplied by domestic producers.

TABLE 9.—*Fluorspar: United States imports for consumption, by principal sources, average 1937–39, annual 1943–51*

Year	Mexico	Germany [1]	Spain	Newfoundland and Labrador	Canada	Italy	All other	Total
	Quantity (short tons)							
Average 1937–39	[2] 184	5,861	347	4,180	----------	375	[3] 13,382	24,329
Annual:								
1943	20,515	----------	15,540	7,143	----------	----------	571	43,769
1944	58,324	----------	9,177	16,072	69	----------	3,558	87,200
1945	62,575	----------	27,322	12,667	2,361	----------	----------	104,925
1946	24,063	----------	2,791	2,688	310	----------	----------	29,852
1947	51,965	----------	12,042	10,307	284	4,126	1	78,725
1948	79,406	1,379	9,717	16,380	----------	4,744	----------	111,626
1949	58,020	----------	12,648	15,344	119	7,857	1,630	95,618
1950 [4]	73,049	29,624	35,302	([5])	[5] 14,163	9,722	2,774	164,634
1951 [4]	64,025	47,890	32,865	([5])	[5] 21,460	11,804	3,231	181,275
	Foreign value (thousands of dollars)							
Average 1937–39	3	90	3	78	----------	2	[3] 111	287
Annual:								
1943	219	----------	224	176	----------	----------	8	627
1944	980	----------	222	431	2	----------	45	1,680
1945	1,055	----------	604	399	75	----------	----------	2,223
1946	385	----------	42	81	9	----------	----------	517
1947	774	----------	159	275	8	41	([6])	1,257
1948	1,156	12	126	400	----------	41	----------	1,825
1949	827	----------	200	362	2	130	28	1,549
1950 [4]	894	527	502	([5])	[5] 426	201	30	2,580
1951 [4]	1,020	1,175	770	([5])	[5] 713	350	82	4,110
	Unit value (per short ton) [7]							
Average 1937–39	$15.73	$15.43	$10.12	$18.61	----------	$5.11	$8.28	$11.81
Annual:								
1943	10.69	----------	14.44	24.62	----------	----------	13.13	14.33
1944	16.80	----------	24.20	26.84	$28.28	----------	12.58	19.27
1945	16.85	----------	25.41	31.49	31.80	----------	----------	21.18
1946	15.99	----------	15.22	30.00	28.82	----------	----------	17.31
1947	14.90	----------	13.19	26.69	26.74	9.89	169.00	15.96
1948	14.56	8.40	12.92	29.94	----------	8.70	----------	16.35
1949	14.26	----------	15.84	23.57	13.42	16.59	17.06	16.20
1950 [4]	12.23	17.80	14.21	([5])	[5] 30.09	20.63	11.00	15.67
1951 [4]	15.93	24.53	23.44	([5])	[5] 33.23	29.65	25.38	22.67

[1] Includes Austria, 1938–43.
[2] 2-year average; there were no imports in 1937.
[3] Includes 11,554 tons, valued at $83,000, from France.
[4] Preliminary.
[5] Newfoundland and Labrador included with Canada, they became part of Canada Mar. 31, 1949.
[6] Less than $500.
[7] Calculated on the basis of unrounded figures for total value.

Source: Compiled from official statistics of the U. S. Department of Commerce.

The United States has never been a large exporter of fluorspar. During 1937–39 exports averaged 1,407 tons a year, valued at about $31,000 (see table 10). Exports increased during the war and in 1943 amounted to 9,365 tons, valued at about $327,000. Exports in postwar years have been small; in 1951 they amounted to 1,093 tons, valued at about $67,000.

Export statistics do not distinguish grades of fluorspar, although for the years 1945–48 there are separate figures for exports of acid-grade fluorspar and fluorspar other than acid grade. In these 4 years exports of acid fluorspar accounted for about two-thirds of total exports; the remainder is known to have been mostly ceramic fluorspar. Canada and Peru are the most important foreign markets, accounting in most years for over 90 percent of total exports.

TABLE 10.—*Fluorspar: United States exports, average 1937–39, annual 1943 and 1946–51*

Period	Quantity	Value	Period	Quantity	Value
	Short tons	*Thousands*		*Short tons*	*Thousands*
Average 1937-39 [1]	1,407	$31	Annual—Continued		
Annual:			1948	742	$34
1943	9,365	327	1949	765	39
1946	1,855	77	1950 [2]	687	33
1947	1,329	67	1951 [2]	1,093	67

[1] As reported by producers to the U. S. Bureau of Mines.
[2] Preliminary.

Source: Official statistics of the U. S. Department of Commerce, except as noted.

PRICES

Fluorspar is sold by standard grades, but within grades prices vary according to quantity involved (whether sold in carload lots, or in bulk in less than carload lots, in bags, etc.) and according to the calcium fluoride content. Prices for metallurgical-grade fluorspar are quoted on the basis of calculated "effective calcium fluoride content," which differs from gross calcium fluoride content in that the calculation of the effective content takes into account the extent to which the presence of silica in the material diminishes the usefulness of the fluorspar as a furnace flux. For example, each unit of silica which is present in fluorspar is considered as offsetting 2.5 units of calcium fluoride; thus the calcium fluoride content which is effective for metallurgical purposes is calculated by deducting from the gross calcium fluoride content 2.5 percent for each 1 percent of silica content. Hence, a metallurgical-grade fluorspar containing 85 percent of calcium fluoride and 5 percent of silica has a calculated effective calcium fluoride content of 85 percent minus 12 percent (2.5 x 5), or 72.5 percent.

Selected price data for domestic and imported fluorspar, shown in table 11, indicate that there has been a substantial though not uniform upward trend in prices between 1939 and 1952. Prices of both the acid and metallurgical grades have approximately doubled during this period compared with an increase of about 50 percent in the price for ceramic-grade fluorspar. No price quotations are available for imported acid-grade fluorspar. Imports of such material, although qualifying as acid grade on the basis of calcium fluoride content, require further processing at domestic plants before being marketed in the United States.

Sales of domestic fluorspar were placed under price control in January 1951 but such control was removed from acid-grade flurospar on August 10, 1951. No price restrictions apply to imported fluorspar.

TABLE 11.—*Flourspar: Selected price quotations on domestic and foreign material, by grades, on specified dates 1939 to 1952*

[Per short ton in carlots; domestic fluorspar f. o. b. mines Illinois-Kentucky; imported fluorspar duty paid f. o. b. port of entry]

Grade	May 15, 1939	May 17, 1943	May 17, 1948	May 19, 1952
Domestic fluorspar:				
Acid grade	[1] $31.00	[2] $35.00	$40.00–$47.00	$60.00
Ceramic grade	[1] 30.00	$33.00– 36.20	38.50	$41.50– 47.60
Metallurgical grade: Fluxing lump or gravel	$17.00– 22.00	25.00– 28.00	30.00– 34.00	38.00– 41.00
Imported fluorspar: Metallurgical grade: Fluxing lump or gravel	[2] 21.50– 27.00	28.00	[1] 34.00	38.00– 40.00

[1] Estimated from trade information.
[2] E and MJ Metal and Mineral Markets.

Source: Oil, Paint, and Drug Reporter, except as noted.

INDUSTRY AND TRADE OF PRINCIPAL FOREIGN PRODUCING COUNTRIES

Most of the world's fluorspar is produced in countries that ordinarily consume a large part of their output. However, important exceptions to this generalization are Mexico and Spain, which export virtually all of their production.

Canada

Nearly all the fluorspar produced in Canada comes from mines located near the town of St. Lawrence in the Province of Newfoundland. Comparatively small amounts are produced also in the Province of Ontario. The Newfoundland deposits are among the largest, richest, and highest in quality ever discovered. The St. Lawrence Corp. of Newfoundland, Ltd., and Newfoundland Fluorspar, Ltd., a subsidiary of Aluminum Co. of Canada, Ltd., are the principal producers. The St. Lawrence Corp. ships most of its output to a subsidiary company at Wilmington, Del., for further processing and sale in the United States, whereas the output of Newfoundland Fluorspar, Ltd., is used principally by Aluminium, Ltd., in its Canadian aluminum plants.

Canadian production of fluorspar has increased steadily in recent years; output amounted to about 65,000 tons in 1950, compared with 62,000 tons in 1949 and 47,000 tons in 1947. On the average, about one-fourth of the total output is exported, all of it to the United States.

Germany

Before World War II Germany usually ranked a close second after the United States in world production of fluorspar and was the world's leading exporter of fluorspar. At present, fluorspar is produced in both Eastern and Western Germany. The deposits in Bavaria and northern Baden are in the American zone; those in the Harz Mountains, Thuringia, and in Saxony are in the Russian zone; and those in southern Baden and southern Wurtemberg are in the French zone. In prewar years production in what is now the western zones ordinarily accounted for about 60 percent of the total German output of fluorspar, and most of the western output has been mined in Bavaria.

In the period 1937–39 production of fluorspar in Germany averaged about 167,000 tons a year, and during the war exceeded 200,000 tons. For postwar years production data are available only for the western zones, the area covered by the Federal Republic. Output in these zones averaged about 33,500 tons a year in 1946–49. Although official statistics are not available, it is known that production increased substantially in 1950 and 1951; United States imports from Germany in those years were 29,600 and 47,900 tons, respectively.

Germany has regained its former position as a large exporter of fluorspar. Most of the output will probably continue to be exported unless the German aluminum industry is revived.

Mexico

Although Mexico did not begin to produce fluorspar in commercial quantities until 1940, it has since become the most important United States supplier. Most of the fluorspar mined in Mexico has come from La Azul mine near Taxco, State of Guerrero; but in recent years increased quantities have been produced in the states of Coahuila and Chihuahua. It is reported that production in these states probably could be increased substantially, and that a large part of the potential increase in output would be acid fluorspar. Mexico's fluorspar reserves are large and of high grade. Most of the ore exported contains about 92 percent calcium fluoride and 6 percent silica.

Official statistics on Mexican fluorspar production are not available. It is known, however, that virtually all of the output is exported and that most of the exports are to the United States; local steel plants are said to use only about 2,000 tons a year. Total exports in 1950 amounted to about 72,000 tons, compared with 62,000 tons in 1949.

Spain

Fluorspar is mined in Spain in the Provinces of Barcelona and Gerona, which are in the northeastern part of the country, and in Oviedo, which is in the northwestern part. Production in 1937–39 averaged about 8,000 tons a year, but increased sharply during the war, exceeding 61,000 tons in 1944. Though it declined in 1945, it has increased steadily in subsequent years; in 1949 it amounted to 68,000 tons, exceeding the wartime peak. In 1950, however, output declined and amounted to 36,000 tons.

Consumption of fluorspar in Spain is very small and virtually the entire output is exported. The Spanish fluorspar deposits are of relatively high grade, but most of the output comes from comparatively small mines which do not have adequate processing facilities. As a result much of the Spanish material fails to meet the quality specifications followed in certain important markets.

United Kingdom

The most important fluorspar-producing centers in the United Kingdom are in Derbyshire and Durham, but fluorspar is found also in Cornwall and North Wales. Production, which during 1937–39 averaged 42,000 tons a year, has shown an upward trend. It increased during the war, amounting to about 61,000 tons in 1943. Output since the war has been above the prewar level and reached an alltime high of about 78,000 tons in 1948; it was 74,000 tons in 1949, the latest year for which official statistics are available.

In the United Kingdom fluorspar occurs in association with lead ore. Current production comes from old lead mines that have been reopened for fluorspar, from veins of lead-mining areas containing chiefly fluorspar, and from the reworking of old lead-mining dumps. Almost all of the production of the United Kingdom is consumed domestically; little is exported.

Other countries

Fluorspar is produced also in a number of other countries. Among the more important of these are the Soviet Union, France, Italy, and South Korea. Deposits of fluorspar in the Soviet Union are reported to be large. In the period 1934–36 production of fluorspar in the Soviet Union averaged about 50,000 tons a year. No data are available for later years, but considering the great expansion of the Russian steel and aluminum industries in the last decade, current fluorspar production is probably much larger than in 1934–36.

France, in its southern area, has extensive deposits of high-quality fluorspar, with the calcium fluoride content ranging from 92 to 98 percent. Production in some years has been relatively large, and mining and milling techniques are said to be advanced.

Production of fluorspar in Italy has fluctuated greatly in the postwar years, although it has been above the prewar level. Output amounted to about 38,000 tons in 1950, compared with about 20,000 tons in 1949 and with an annual average of about 14,000 tons during 1937–39.

South Korea produced substantial amounts of fluorspar while under Japanese control, but no adequate information is available on the current status of fluorspar mining activities.

PROSPECTIVE UNITED STATES NEEDS AND SUPPLIES

The importance of fluorspar to national defense lies in its use as a flux in steel manufacture and as a material for the production of aluminum and important chemicals. The kinds of fluorspar required for such uses are the metallurgical and acid grades. These two grades are included by the Munitions Board among materials listed as strategic and critical, and, to assure adequate supplies in the event of a national emergency, provision has been made for stockpiling them. It is with metallurgical and acid fluorspar—referred to as strategic fluorspar—that this discussion is primarily concerned. No strategic importance attaches to the use of fluorspar in ceramic manufacture.

The trend of United States fluorspar consumption has been upward since the late 1930's. Consumption increased sharply after the outbreak of hostilities in Korea, and was nearly 500,000 tons in 1951, greatly exceeding the wartime peak of about 410,000 tons in 1944. Demand is expected to increase further in the years immediately ahead because of the scheduled expansion in the production of both steel and aluminum and the increased use of fluorine chemicals in the manufacture of high-octane gasoline and other products. Of the total amount of fluorspar used, the strategic grades account for about 85 percent. Approximately two-thirds of the demand for strategic fluorspar is for the metallurgical grade.

United States production of fluorspar has not increased as rapidly as domestic requirements, with the result that for the years 1950–51 imports represented about 37 percent of domestic consumption, compared with about 15 percent before the war and 20 percent during 1946–49. In general, before the war the use of imported fluorspar was confined almost entirely to the Eastern States. In postwar years, however, the use of imported fluorspar has not been confined to the

eastern seaboard, and substantial quantities of imported material have been shipped to Midwestern processing plants for treatment and for mixing with domestic fluorspar.

The two grades of strategic fluorspar present quite different supply problems. Until the postwar period the bulk of the metallurgical fluorspar consumed in the United States came from domestic sources; the large imports during World War II went almost entirely into Government stockpile. Supplies of metallurgical fluorspar have been adequate since the war, and Government stocks of this grade are understood to be substantial. Assuming uninterrupted imports—especially from Mexico—and continued domestic production at the 1951 level, the total supply of metallurgical fluorspar should continue to be adequate for the next few years.

The supply of acid fluorspar, on the other hand, has not been adequate to meet the greatly increased demand in recent years. Moreover, the expansion that is underway in the domestic aluminum industry and the increased need for high-octane gasoline are expected to double the present acid fluorspar requirements (which include scheduled Government stockpile purchases) within the next few years. To meet this greater demand, larger supplies of acid-grade fluorspar are needed from both domestic and foreign sources, and the Defense Materials Procurement Agency has undertaken a program for providing Government aid to stimulate expansion of acid-fluorspar producing facilities, including mines and processing plants, which it is expected will approximately double the available supply of acid fluorspar in the next few years. Some of the expansion of domestic facilities consists of the construction, equipment, or enlargement of processing plants that treat mainly foreign ores.

To date 9 projects have been approved under the expansion program, of which 6 involve construction of new processing plants and 3 expansion of existing mining and processing facilities. All of these projects are financed entirely by the companies concerned and all have been granted the accelerated amortization privilege for tax purposes; in addition, the Government has agreed to make advances against future purchases to 2 of them. Under the arrangements now in effect with reference to the 9 projects, the proportion of the investment subject to special amortization averages 60 percent.

In addition to these types of assistance, the Government aids the acid-fluorspar producers by contracting with them to take at guaranteed minimum prices the additional output of acid-fluorspar resulting from the expansion program; these purchase contracts are negotiated for periods of 3 to 5 years. The minimum price, which differs for each contract, is based upon the actual cost of production, including allowances for amortization of the investment. Furthermore, the Government has the option under present contracts to purchase 40 to 60 percent of the additional output at the stated minimum price or the market price, whichever may be higher.

Even with increased production from domestic sources, larger imports will also be required to meet future United States acid-fluorspar requirements. Substantially increased quantities of acid-grade material are expected to become available to the United States from Canada (Newfoundland), Mexico, Spain, and Italy. However, imports usually are in the form of concentrates and require further processing before they can be marketed in the United States.

With the completion of additional production facilities under the Government-supported expansion program, and assuming substantially increased imports for processing at domestic plants, it seems likely that—barring the hazard of unforeseen developments—total supplies of acid-grade fluorspar will probably meet United States requirements during the next few years.

The CHEMICAL INDUSTRY

FACTS BOOK

FIRST EDITION

Manufacturing Chemists' Association, Inc.
Woodward Building
15th and H Streets, N.W., Washington 5, D. C.

FOREWORD

Both as witness and participant, every American has been sharing over the past 25 years in an extraordinary economic adventure. For the first time in history, the fruits of an unprecedented living standard have been extended to practically an entire population.

Neither black magic nor the generous bounty of nature has been responsible for this achievement. It has come only because we have created in this country a new and spectacular technology which multiplies each man's effort many times over. Technology, which is simply the tools and techniques that extend productive capacity, is the true engineer of our national development.

Nowhere has the leverage of modern technology been brought to bear more effectively than in the chemical industry. The history of the chemical industry has been one of continuous and persistent innovation. Its research laboratories create new materials and new processes that in time are reflected in the purchasing power of every family and in the financial bloodstream of every community. What we call our standard of living is actually nothing more than the accumulation of these gains, joining with a steady flow of similar contributions by all industries.

Technology has been the great revolutionary of our times. In a few generations it has exercised more profound influence on social custom and social reform than legislation or codes of law could effect in centuries.

The direct results of technology have been the vast outpourings of our factories and the abundance of our harvests, from which have stemmed the ease, comfort and convenience of life in the United States.

The indirect effects are our standards of education and health; the dignity of leisure and personal development; the social responsibilities we assume in our care of the young, the aged and the infirm.

It is hoped that this Facts Book will help create a wider understanding of how these benefits have been spread through chemical progress.

W. H. Ward, Chairman
Manufacturing Chemists' Association

PREFACE

SIGNIFICANT FACTS ABOUT THE CHEMICAL INDUSTRY

1. The chemical industry is one of the basic industries.

Millions of tons of chemicals are used annually by every other major industry. They range from basic raw materials for other commodities to specialized chemicals which perform a small but vital function in manufacturing processes. Hardly a manufactured article can be made today without the use of chemicals. In addition, the chemical industry is supplying an increasing number of consumer products. Chemicals and allied products rank among the first six industries in value of product. *See Chapters 1 and 3.*

2. The chemical industry has one of the highest growth rates.

A constant stream of new and better products for industrial and consumer needs has promoted vigorous growth of the chemical industry. Since 1925, the chemical industry has grown at an average rate of about 10% a year, compared to 3% for all industry. Future growth, at a more rapid rate than the rest of industry, is predicted by authoritative studies. *See Chapters 3, 4 and 5.*

3. The chemical industry is a dynamic factor in creating new industries and new jobs.

Through its many new products such as synthetic fibers, medicinals, plastics and agricultural chemicals, the chemical industry has created thousands of new businesses. It has given employment to added hundreds of thousands in new jobs both within and without the industry. *See Chapter 3.*

4. The chemical industry is a progressive employer, offering rewarding careers to trained personnel.

In January 1953, the chemical industry employed 769,000 persons whose compensation and employee benefits were among the best in the country. There are many opportunities for technically-trained persons, because the ratio of professional workers to production workers is six times as high for the chemical industry as for all manufacturing. *See Chapters 7 and 9.*

5. Chemical research benefits the nation in many ways.

For many years the chemical industry has been among the leaders in research expenditures to improve existing products, to develop new products and processes and to advance basic knowledge. Resulting chemical products and processes conserve raw materials, replace scarce commodities with synthetics based on plentiful raw materials, promote national self-sufficiency, and hold prices down. *See Chapters 3 and 9.*

6. The chemical industry has been among the leaders in abating air and water pollution.

New chemical plants are carefully engineered to avoid, or minimize to the greatest practicable extent, escape of wastes, stack gases, and objectionable odors. Great strides have been made in controlling pollution from older plants. To this end the industry is currently spending more than $10 million a year in research and the installation and operation of special devices. *See Chapter 8.*

7. The chemical industry has an excellent safety record.

It is not generally known that chemical plants are among the safest places to work. National Safety Council figures show the chemical industry ranks ninth in safety among 40 industries. Its safety record is almost twice as good as that of industry as a whole. *See Chapter 8.*

8. The chemical industry is highly competitive.

Competition is intense in research, processes, raw materials, products and distribution. Companies with largest sales have

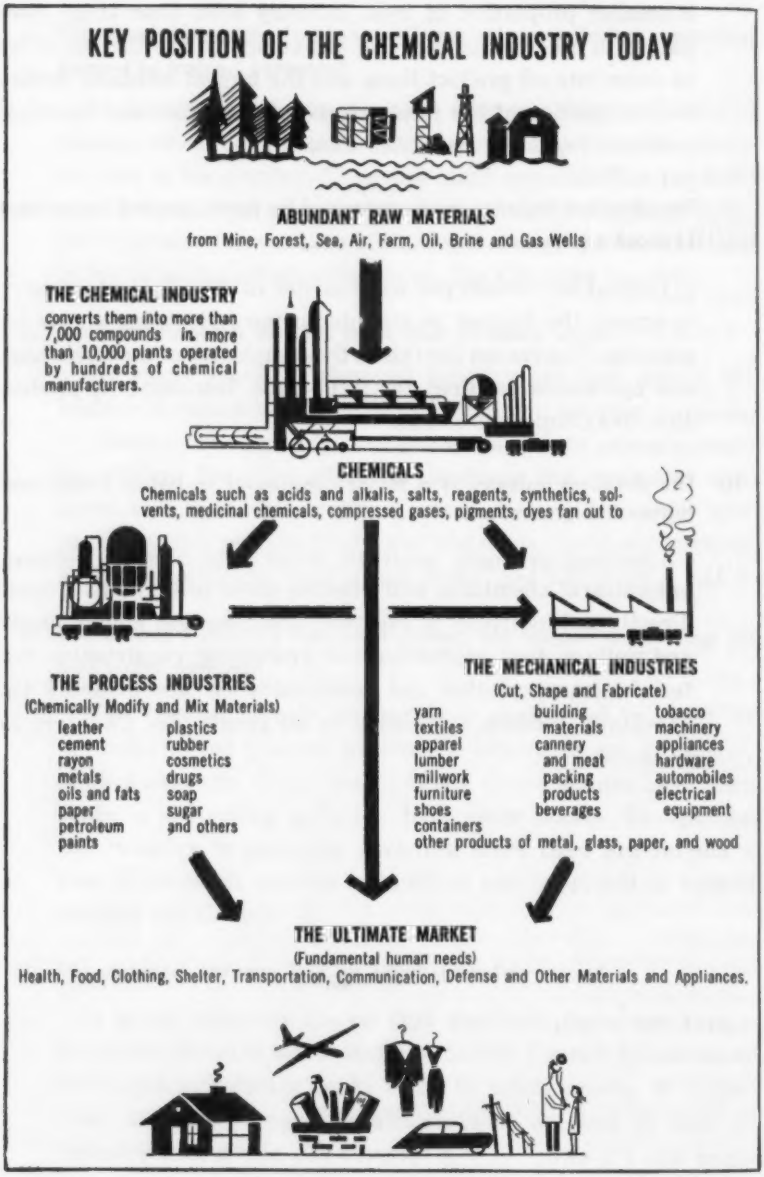
a smaller proportion of total industry sales than large companies in other industries. No one company has the resources to enter into all product lines, and the largest company makes only a fraction of the total volume of chemicals and chemical products regularly made. *See Chapter 5.*

9. The chemical industry is characterized by heavy capital investment in plant equipment.

Capital investment per wage earner in the chemical industry is among the highest in manufacturing industries, and is increasing. The reason for this is the complexity of modern chemical operations required for large-scale, low-unit-cost production. *See Chapters 5 and 10.*

10. The chemical industry is a major contributor to better health and higher living standards.

Chemical products, synthetic medicinals, textiles, rubbers, agricultural chemicals, and plastics serve basic human needs directly and indirectly in everyday life. Chemical aids to health and welfare, food production and processing, construction materials, transportation and communication are bringing the benefits of modern technology to all people. *See Chapters 11 to 15.*


KEY POSITION OF THE CHEMICAL INDUSTRY TODAY
ABUNDANT RAW MATERIALS
from Mine, Forest, Sea, Air, Farm, Oil, Brine and Gas Wells
THE CHEMICAL INDUSTRY
converts them into more than 7,000 compounds in more than 10,000 plants operated by hundreds of chemical manufacturers.
CHEMICALS
Chemicals such as acids and alkalis, salts, reagents, synthetics, solvents, medicinal chemicals, compressed gases, pigments, dyes fan out to
THE PROCESS INDUSTRIES
(Chemically Modify and Mix Materials)
leather
cement
rayon
metals
oils and fats
paper
petroleum
paints
plastics
rubber
cosmetics
drugs
soap
sugar
and others
THE MECHANICAL INDUSTRIES
(Cut, Shape and Fabricate)
yarn
textiles
apparel
lumber
millwork
furniture
shoes
containers
building materials
cannery and meat packing products
beverages
tobacco machinery
appliances
hardware
automobiles
electrical equipment
other products of metal, glass, paper, and wood
THE ULTIMATE MARKET
(Fundamental human needs)
Health, Food, Clothing, Shelter, Transportation, Communication, Defense and Other Materials and Appliances.

Section One

GROWTH OF THE CHEMICAL INDUSTRY

Chapter One

GROWTH TO RANK OF BASIC INDUSTRY

Early Beginnings

Chemistry is a young science. Only a little more than 150 years ago Lavoisier laid the base for modern developments when he first explained the nature of elementary and compound substances and the role of oxygen in combustion.

From the first colonial settlements in America, however, common chemicals were in demand for meat-pickling, tanning, dyeing and soap-making. John Winthrop, Jr., opened the first chemical plant in America. In 1635 he made saltpeter and alum in Boston and rapidly extended his chemical interests.

The domestic industry grew slowly during the opening of the West, and began to take on some importance around 1850. To meet the demands of the Civil War the fledgling chemical industry expanded 500 per cent, but chemistry and chemical engineering were confined chiefly to sulfuric acid and to phases of starch and glue manufacture. For dyes, drugs and fine chemicals the country was dependent on foreign sources. Although nitrates for the manufacture of fertilizers and explosives had to be imported from Chile, the heavy chemical industry was becoming prominent.

The organic chemical industry, largely based on coal tar, began to grow in the 1880's and to develop industrial, food, medicinal and dye chemicals of relatively simple structure. Alkalis (caustic, soda ash, lime), sulfuric acid and other inorganic materials had become the big volume items by the last half of the 19th century. Production of chemicals made by electricity began shortly before 1900.

In the first decade of the 20th century, new frontiers were opened by commercial processes, including catalytically-promoted chemical reactions. The contact process for making sulfuric acid appeared in this country during this period.

World War I Growth

Prior to World War I, a number of the chemical companies which are today's industry leaders were formed. By 1910, American production of sulfuric acid and alkalis had exceeded the combined pro-

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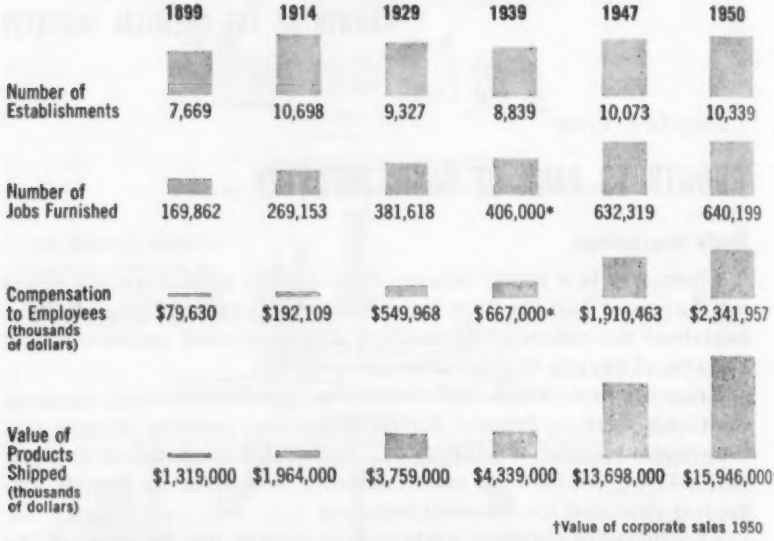
FIFTY YEARS OF CHEMICAL AND ALLIED PRODUCT GROWTH



†Value of corporate sales 1950

* Bureau of Census does not give figures. Jobs Furnished figure was obtained from U.S. Department of Labor, 1950 Handbook of Labor Statistics p. 10; Compensation to Employees from U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, July 1951, p. 160.

Source: U. S. Department of Commerce, Bureau of the Census, Census of Manufactures: 1947, Volume II, Statistics by Industry, p. 382; Annual Survey of Manufactures, 1949 and 1950, pp. 28, 134; Statistical Abstracts, 1913.

duction of England, Germany and France. At the beginning of World War I, however, the American chemical industry was still relatively small.

Because of war's demands, chemical manufacturing mushroomed into a major industry. Investment in the industry doubled between 1913 and 1919. A good start was made in creating a domestic dye industry. Research done abroad plus American ingenuity in working out new and improved products and processes laid the foundation stones for a vigorous chemical industry which has made America independent of foreign sources of supply in the entire synthetic organic field.

A vast program of constructing chemical-recovery coke ovens to supplement and replace the wasteful beehive oven insured raw material supplies for the infant American organic chemical industry.

The emergence of chemical industry research took place in the early 1900's. Teams of specialists supplanted the lone investigator in most cases as research programs expanded in the '20s. This period saw the beginning of the first substantial contributions of the

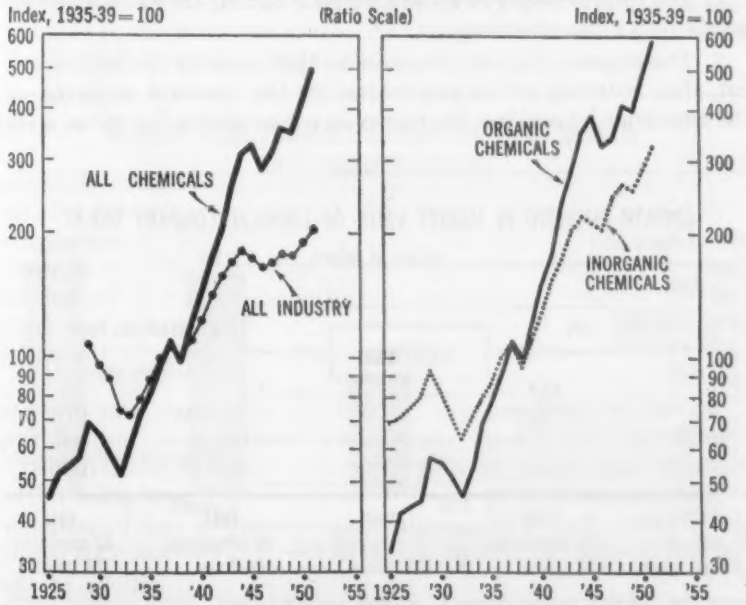
DEMANDS FOR CHEMICALS AND ALLIED PRODUCTS HAVE INCREASED FOUR-FOLD SINCE 1939

Source: U. S. Department of Commerce, Office of Business Economics, Business Structures Division.

American chemical industry to medicine. Prior to this time, with the exception of a few isolated achievements, research and development in the field of medicinal chemicals had been done abroad.

Valuable products based on the chemist's knowledge of the behavior of giant molecules began to come along after World War I. By studying the complex molecules of such natural materials as wood, silk, rubber and cotton, the chemical industry began to make new synthetic plastics and fibers which have proved to be not only

RAPID GROWTH OF CHEMICAL PRODUCTION



Source: U.S. Department of Commerce, Office of Business Economics, "Markets After the Defense Expansion," p. 70

satisfactory replacements for natural materials but substances often with far superior properties.

Around 1925, the first commercial production of petrochemicals (chemicals derived from crude oil and natural gas) got under way. The production of synthetic ammonia and nitric acid obtained from atmospheric nitrogen—one of the notable industrial achievements of the 20th century—began to develop during this period. According to The President's Materials Policy Commission report, "Resources For Freedom," the greatest scientific and educational activity since 1925 has dealt with matters of chemistry.

Chemical Growth—a 20th Century Phenomenon

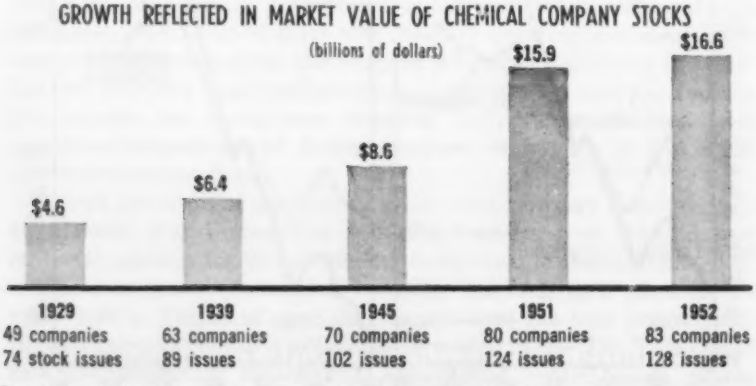
The ultimate reason behind the growth of any industry is public acceptance. The fact that the chemical industry in the United States has shown a tremendous rate of growth in the past quarter-century is a testimonial to the contribution the industry has made to the American public. In its scope and influence, the expansion of the chemical industry in the 20th century is comparable to the growth of the railroads in the 19th century.

The chemical industry has historically concentrated on three things:

1. The creation of new materials that serve human needs better than existing materials;

2. The improvement of those materials so that they serve human needs even more effectively;

3. The improvement of processes so that costs of production are cut, thus reducing prices and increasing the standard of living of the consumer by making the money saved available for other uses.



Source: New York Stock Exchange Report on Securities, year-end figures.

CHEMICALS AND ALLIED PRODUCTS

GROWTH IN VALUE ADDED BY MANUFACTURE

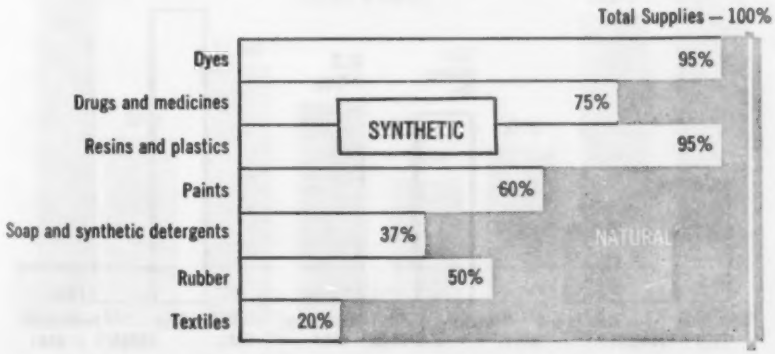
(thousands of dollars)

	1939	1947	1951
Total — Chemicals and allied products	$1,818,941	$5,365,201	$8,164,512
Industrial inorganic chemicals	233,718	454,699	854,309
Industrial organic chemicals	476,801	1,551,381	2,863,671
Drugs and medicines	260,649	748,570	1,276,906
Soap and related products	200,988	606,079	677,346
Paint and allied products	225,818	573,237	745,000
Gum and wood chemicals	20,723	62,965	73,006
Fertilizers	57,241	186,601	245,096
Vegetable and animal oils	86,785	482,476	430,425
Miscellaneous chemical products	256,218	699,193	998,753

Source: U. S. Department of Commerce, Bureau of the Census, Census of Manufactures: 1947, Vol. III (Statistics by States,) p. 25; Annual Survey of Manufactures: Advance report, March 11, 1953, p. 10.

As has been shown over the years, the formula has all the elements of dynamic growth. Beyond that, the growth of the chemical industry is a good example of the virility of the incentive enterprise system in the United States. It serves as a continuing stimulus to the whole economy, creating new products, new industries and an upward spiral of prosperity. Even during the depression years of the '30s, the chemical industry was conducting the research and bringing forth the products that helped win World War II and contributed to the post-war prosperity. Many new products, curtailed by the war emergency, stimulated business in the late '40s.

IN MANY FIELDS SYNTHETICS ACCOUNT FOR LARGE SHARE OF TOTAL PRODUCTS SUPPLIED 1951



Source: Dr. Roger Adams, "Man's Synthetic Future," Address to American Association for the Advancement of Science, December 28, 1951; Association of American Soap & Glycerine Producers, Inc.

RANK OF MANUFACTURING INDUSTRIES

Value of products in billions of dollars

	1951
1. Food	42.6
2. Iron and steel	26.7
3. Petroleum and coal products	22.9
4. Machinery, except electrical	20.1
5. Automobiles and automotive equipment	19.7
6. Chemicals and allied products	18.7*
7. Textile mill products	14.8
8. Electrical machinery	12.8
9. Non-ferrous metals and products	10.0
10. Apparel and finished fabrics	9.6

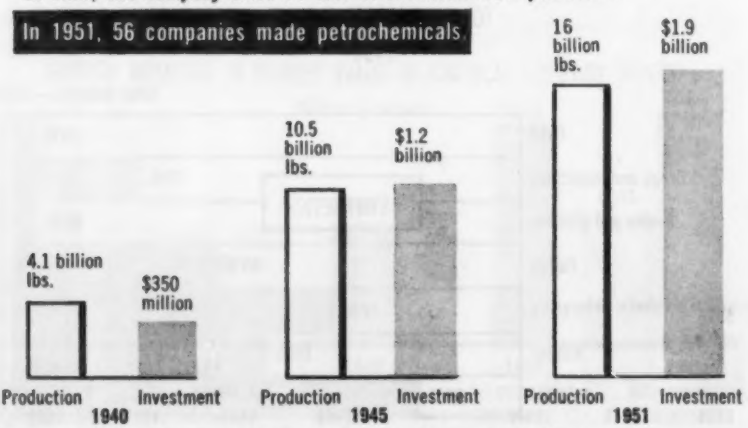
Source: U. S. Department of Commerce, Office of Business Economics, Survey of Current Business July 1952, p. 23. * revised

Man-made textile fibers are a case in point. Certain limitations of natural fibers have been overcome by blending with the new synthetics. Many combinations make it possible to engineer fabrics to the job at hand. Resistance to wear, creasing, moisture, and sunlight can now be made inherent in fibers. Longer fabric life, improved appearance and easier, less expensive care means the consumer gets better value for his money.

The companies which have developed these fibers profit, of course. They could not otherwise continue in business. But their profits are insignificant compared to how the consumer profits through better products at less over-all cost and how the nation profits through

RESEARCH HAS MADE PROCESSING PETROLEUM FOR CHEMICALS A MAJOR INDUSTRY SINCE 1925

In 1925, one company made 75 tons of chemicals from petroleum.



Source: John Kircher, Continental Oil Co., AP dispatch, Houston, Feb. 2, 1952.

the creation of new jobs, a higher standard of living, and a more dynamic economy.

Key Position of the Chemical Industry Today

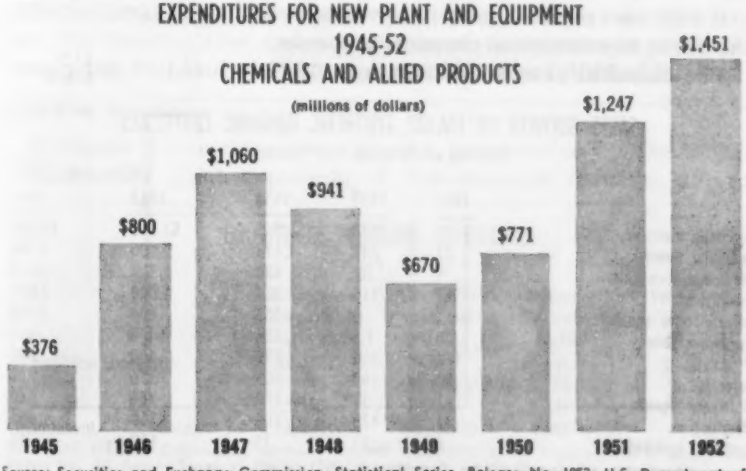
As a result of its achievements during World War II, outlined on page 100, the chemical industry became widely recognized as one of the basic industries of the United States. Rapid growth in the post-war period and the expansion generated by defense mobilization since 1950 have strengthened this position.

In the last 20 years, by creating a large number of useful chemical compounds from plentiful raw materials through synthesis, the chemical industry has become a major materials supplier, ranking in tonnage and value of output with other industrial giants—steel, machinery, automobiles and textiles. Its products are indispensable to the operation of every other industry. According to the U. S. Department of Commerce, chemicals is the only group which supplies all 72 industrial groups.

Chemicals and Allied Products

Chemicals and allied products now account for six or seven per cent of the value of all industrial production. Calculating just the value of chemicals manufactured, the industry ranks ninth in annual sales, but further operations carry chemicals beyond their initial form on many fronts, adding substantially to their value. An increasing number of chemical manufacturers are making allied products for the ultimate consumer.

The category "Chemicals and Allied Products," as defined by the



Source: Securities and Exchange Commission, Statistical Series, Release No. 1052; U.S. Department of Commerce, Business News Reports, Release March 24, 1953.

VOLUME OF SYNTHETICS GROWING STEADILY

		1925	1937	1950	1962 (Estimated)	1975 (Estimated)
Synthetic plastics	million lbs.	46	315	2,901	10,000	25,000
Synthetic fibers	million lbs.	58	329	1,496	3,500	6,000
Medicinal chemicals	million lbs.	3	17	46	....	....
Fertilizers	thousand tons plant food	790	1,300	4,430	11,500	23,000
Surface-active agents	million lbs.	0	9	664	2,600	4,400
Synthetic rubber	thousand long tons	0	0.65*	520	850	1,200
Pigments	million lbs.	746	849	1,426	2,100	3,200
Solvents	million lbs.	650	1,300	3,200	5,400	9,200
Antiknock agents	million lbs.	3	65*	350*	650	1,000
Dyes	million lbs.	86	122	202	260	400
Synthetic insecticides	million lbs.	27	102	271	430	900

Source: Chemical and Engineering News, December 10, 1951, p. 5230.
* Private communication.

U. S. Department of Commerce in the 1947 Census of Manufactures and the Annual Surveys, although somewhat limited today, comes closest to defining the scope of the modern chemical industry and will be mainly used in this book. On this basis, preliminary estimates indicate the total value of sales for the industry in 1952 was $18,660,000,000.

Chemical Process Industries

Even these impressive figures, according to many students of industry, do not fully show the importance of chemicals. A grouping called "Chemical Process Industries," as shown in the diagram facing page one, is widely recognized. This not only includes the manufacture of chemicals and allied products but goes beyond to take in rayon, paper and pulp, ceramics and glass, sugar refining and a number of other industries whose products are obtained with the use of chemicals and chemical processes.

The chemical process industries in 1947 included 18,000 plants

SALES GROWTH OF MAJOR SYNTHETIC ORGANIC CHEMICALS

(Millions of dollars at 1950 prices)

	1925	1937	1950	1962 (Estimated)	1975 (Estimated)
Synthetic plastics	$ 28	$128	$ 949	$3,200	$8,000
Synthetic fibers	37	244	1,173	2,700	4,700
Medicinal chemicals	5	32	420	1,300	3,000
Fertilizers	71	116	386	1,000	2,000
Surface-active agents	0	3	153	600	1,000
Synthetic rubber	0	1.6*	284	470	650
Pigments	120	159	270	400	600
Solvents	50	100	205	350	600
Antiknock agents	2	37*	200*	360	560
Dyes	87	123	204	260	400
Synthetic insecticides	4	21	75	120	250

Source: Chemical and Engineering News, December 10, 1951, p. 5229.
* Private communication.

GROWTH OF AGRICULTURAL CHEMICALS

(Insecticides, Herbicides, Fungicides)

	Production (thousands of pounds)		
	1947	1950	1951
Benzene hexachloride	8,197	76,698	116,988
DDT	49,600	78,150	106,139
Parathion	....	n.a.	4,638
Aldrin, chlordane, dieldrin, toxaphene	....	16,125	87,902
2,4-D | Herbicides	5,629	25,784	34,795
2,4,5-T | (weed-killers)	....	n.a.	4,860
Dithiocarbamate fungicides	3,991	n.a.	13,223

n.a.—not available

Source: U. S. Tariff Commission Reports No. 162, 173, 175, Second series.

GROWTH IN FERTILIZER CONSUMPTION

1935-1939 Average: 7.5 million tons 1949-1950: 18 million tons 1951-1952: 22.4 million tons

Source: U. S. Department of Agriculture, ARA, Release July 15, 1952; Agricultural Chemicals, March 1953, p. 48.

and produced products valued at $35.4 billion. This includes such industries as rubber processing, petroleum refining and paper and paperboard manufacturing.

By another definition, all chemical process industries in 1952 did $50 billion worth of business, or about 15% of the value of U. S. output of all goods and services.

Furthermore, a number of industries heretofore not connected with chemical production today engage in a number of distinctly chemical operations. The steel industry, millers, meat packers, oil refiners and food processors have logically extended their interests into the chemical realm. Many of the "mechanical" industries are also closely tied to chemicals and chemical products, as shown in the diagram facing page one.

With diversification and integration growing throughout industry, the ramifications and importance of chemicals and chemical processing will be even more widespread in the future.

Post-War Expansion

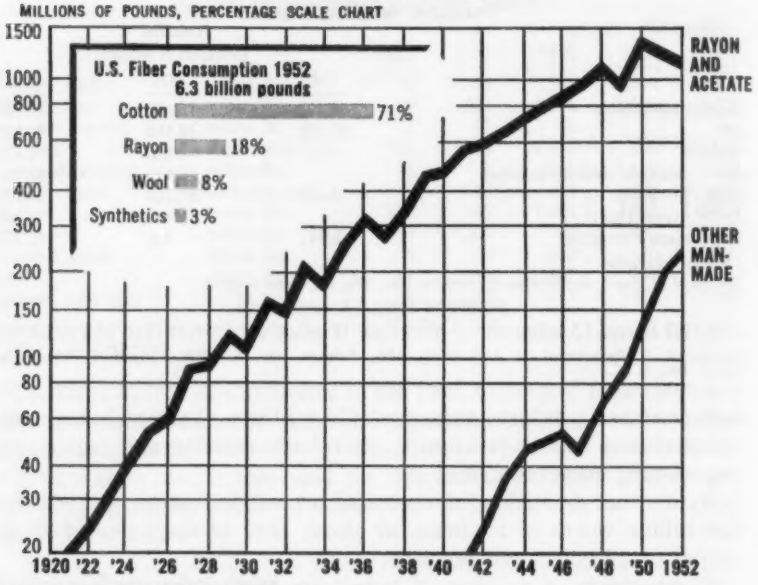
Although tremendous new capacity was created by the multi-billion dollar plant expansion of the chemical industry during

GROWTH OF MEDICINAL CHEMICALS

	1946		1951	
	Production (thousands of pounds)	Value of Sales (thousands of dollars)	Production (thousands of pounds)	Value of Sales (thousands of (dollars)
All Medicinal Chemicals	40,747	$218,336	73,543	$504,252
Antibiotics	46	95,670	1,286	317,058
Sulfa drugs	5,103	23,356	6,411	24,613
Vitamins	2,494	53,556	4,338	74,467

Source: U. S. Tariff Commission, Synthetic Organic Chemicals, U. S. Production and Sales, 1946, Report No. 159, Second Series, pp. 34-36; 1951 Report No. 175, pp. 36-38.

GROWTH OF MAN-MADE FIBERS



Source: Textile Organon, March 1953 p. 43.

World War II, the market for products was so great that an estimated $5 billion more was invested in new plants and facilities between 1945 and the outbreak of hostilities in Korea. Today the chemical industry turns out in two hours' time a volume exceeding the year's output in 1865.

Growth since 1945 has characterized the entire chemical field. Production of plastics, agricultural chemicals, antibiotics and the newer synthetic fibers has led the advance.

The essentiality of chemicals in any picture of national preparedness has dictated great increases in productive capacity since 1950 for dozens of industrial chemicals. By 1955 the chemical industry will have about one-third more capacity than in 1950.

The American chemical industry today stands far above that of any nation in the world. America's chemical might is a deterrent to aggression and a powerful factor in the domestic economy.

GROWTH IN PLASTICS AND SYNTHETIC RESINS PRODUCTION

(thousands of pounds)

1922	1932	1942	1952*	1953*
5,944	29,039	426,731	2,600,000	2,808,000

Source: U. S. Tariff Commission from release of The Society of the Plastics Industry, Inc., Dec. 29, 1952.
* Estimated by The Society.

Section One

GROWTH OF THE CHEMICAL INDUSTRY

Chapter Two

WHAT THE CHEMICAL INDUSTRY MAKES

Three principal classes of products comprise "Chemicals and Allied Products" as defined by the Bureau of the Census:

1. *Basic chemicals*, such as acids, alkalis, salts, and tonnage organic chemicals.
2. *Chemical products to be used in further manufacturing*, such as synthetic fibers, plastics materials, solvents, colors and pigments.
3. *Finished chemical products* ready for consumption, such as drugs, cosmetics, paints, detergents, and fertilizers.

CHEMICALS AND ALLIED PRODUCTS INCLUDE THE FOLLOWING:

Industrial inorganic chemicals
- Alkalis and chlorine
- Inorganic chemicals, not elsewhere classified*

Industrial organic chemicals
- Coal tar crudes
- Plastics materials
- Synthetic rubber
- Synthetic fibers
- Explosives
- Organic chemicals, not elsewhere classified†

Soap and related products
- Soap and glycerin
- Cleaning and polishing preparations

Paints and allied products
- Paints and varnishes
- Inorganic color pigments

Fertilizers

Gum and wood chemicals
- Hardwood distillation products
- Softwood distillation products
- Naval stores (turpentine and rosin)
- Natural tanning and dyeing materials

Vegetable and animal oils
- Cottonseed oil
- Linseed oil
- Soybean oil
- Grease and tallow
- Fatty acids

Miscellaneous chemical products
- Printing ink
- Toilet preparations
- Glue and gelatin
- Carbon black
- Compressed and liquefied gases
- Insecticides and fungicides
- Chemical products not elsewhere classified

* Includes sulfuric acid; inorganic acids such as boric, hydrochloric, nitric and phosphoric; inorganic salts of sodium, magnesium, potassium, calcium, aluminum, chromium, mercury, nickel, silver and tin; inorganic compounds such as alums, calcium carbide, sodium silicate, ammonium compounds and anhydrous ammonia; elemental bromine and iodine.

† Intermediates, dyes, color lakes, toners; organic acids, such as acetic, tartaric, formic and their metallic salts; solvents; synthetic perfume and flavoring materials; rubber accelerators and antioxidants; plasticizers; synthetic tanning materials; chemical-warfare materials.

Source: U. S. Department of Commerce, Bureau of the Census, Census of Manufactures: 1947, Volume II, Statistics by Industry, p. 382-3.

HOW CHEMICALS ARE CLASSIFIED

Organic and Inorganic

Chemicals are frequently spoken of as organic or inorganic. The distinction originally was based on whether the chemical in question was derived from living or dead organic matter, that is, plant or animal tissue; or whether it was derived from matter that had never lived, such as rocks and minerals. Thus, chemicals derived from coal, which had its origin in plants that had been dead for thousands of years, were organic. Chemicals derived from substances that had never lived were classed as inorganic.

In 1828 this distinction was upset when Wöhler showed that inorganic materials could be chemically changed into compounds identical with those found in plant and animal matter. Today organic chemicals are defined as compounds which, like plant and animal matter, contain the very prevalent carbon atom. Compounds that do not contain carbon and are largely obtained from minerals and atmospheric gases constitute the inorganic chemicals. By far the most important organics are those derived from coal or petroleum or obtained by fermentations of agricultural materials.

Fine and Heavy

This is a distinction based on price and, to some extent, volume. Generally the more intricate compounds, made to grade and specification for specialized uses at a high-unit price but in relatively small volume, are classed as fine chemicals. They include synthetic flavoring, medicinal chemicals, and many dyes, reagents and analytical chemicals.

Heavy chemicals are the workhorses of industry, the big tonnage materials used in large volume by many industries. They also serve as raw materials for intermediate chemicals from which a variety of end-chemicals are made.

Unlike steel or cotton, chemicals perform their tasks in everyday life inconspicuously and are seldom visible to the consumer. Chemicals used to purify water supplies, to operate refrigeration equipment, and to give special properties to textiles are examples of how chemicals work behind the scenes.

About 25 chemicals are in the heavy chemical class. They are generally produced in quantities of at least half a million tons annually and are sold in bulk. The table on the following page shows the wide use of some of these heavy chemicals in industry.

CHARACTERISTICS OF THE HEAVY CHEMICAL INDUSTRY

High investment	**High break-even point**
Big volume	**Low unit profit**
Intense competition	**Relatively stable demand**

THESE HEAVY CHEMICALS... ARE USED BY THESE INDUSTRIES

	Total 1951 production, millions of short tons	Chemicals, inc. plastics	Food	Agriculture	Textile	Rubber	Paints, dyes, pigments	Petroleum	Pulp and paper	Leather	Glass and ceramics	Ferrous Metallurgy	Non-ferrous Metallurgy	Wood	Water and sewage	Cleaning and refrigeration	Explosives
INORGANICS:																	
Soda ash	5.0	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
Caustic soda	2.5	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	
Chlorine	2.5	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓
Sulfuric acid	13.0	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓
Hydrochloric acid	0.6	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Nitric acid	1.5	✓		✓			✓					✓					✓
Ammonia	1.7	✓		✓	✓	✓	✓	✓	✓	✓		✓				✓	✓
ORGANICS:																	
Benzene	1.0	✓	✓	✓	✓	✓	✓	✓		✓				✓		✓	
Ethanol	.6	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓	✓
Methanol	.6	✓			✓	✓	✓							✓			✓

Source: Modern Industry, January 15, 1951, p. 53.

Note: Sulfur, limestone, salt, cellulose, petroleum, coal, natural gas, although they perform many chemical functions and are used in large volume, are very often classed along with air and water as raw materials. Their use in the chemical industry is briefly discussed in Chapter 6.

A LITTLE DOES A LOT

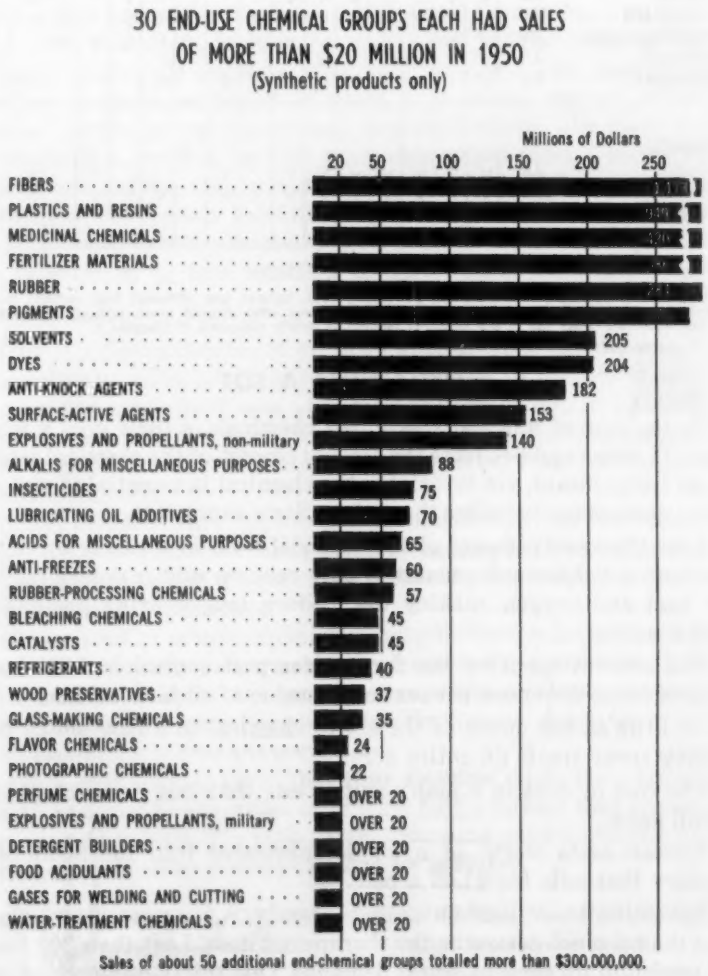
In the case of fine and specialized chemicals, a little goes a long way. In many end-products the amount or cost of the chemical tends to be insignificant, yet invariably the chemical is essential to and in some cases actually makes the article. Some examples:

- Less than one per cent of the material used in a tire is an antioxidant, yet this small amount greatly reduces rubber deterioration by heat and oxygen, making the modern long-wearing passenger tire possible.
- The amount spent by the farmer for pest control in 1951 was equivalent to about one per cent of the value of all farm sales.
- As little as one ounce of the active chemical in a new mosquito-killing spray treats an entire acre.
- The cost of dyes in a man's suit is less than one per cent of its retail price.
- Fifteen cents worth of nylon is fabricated into full-fashioned hosiery that sells for $1.65 a pair.
- Penicillin, other antibiotics and vitamin B_{12} are so potent that less than a pinch serves as the therapeutic dose. Less than 300 tons of penicillin fill present world demands. One thirty-millionth of an ounce of vitamin B_{12} per day halts pernicious anemia.

RAW MATERIAL AND END-CHEMICAL GROUPS

Chemicals are sometimes grouped by the raw materials from which they are obtained: thus, coal chemicals, wood chemicals and petrochemicals. Another group which is made by the use of electricity is referred to as electrochemicals.

Another common method of grouping is by end-use of the chemicals: thus, photographic chemicals, rubber chemicals, agricultural chemicals.



Source: Stanford Research Institute, "Chemical Economics Handbook," End-Chemical Groups, Dec. 1951.

Section One

GROWTH OF THE CHEMICAL INDUSTRY

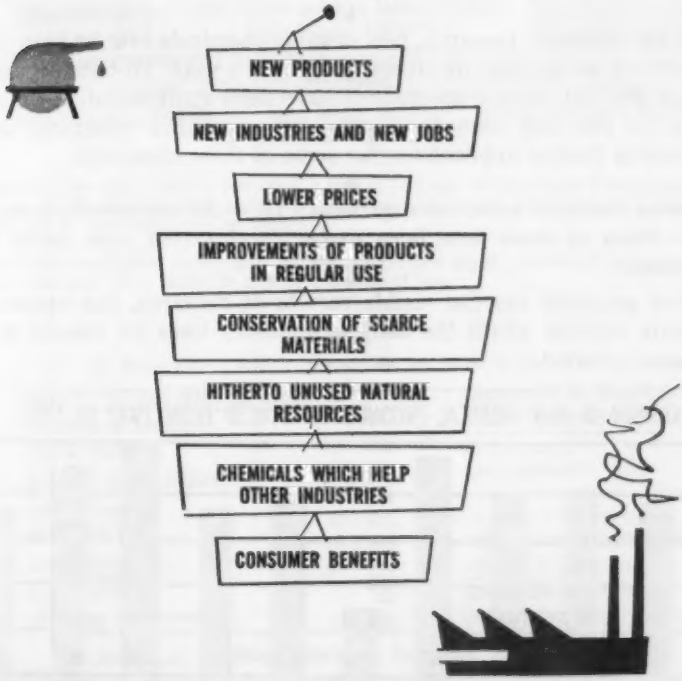
Chapter Three

ACCOMPLISHMENTS OF THE CHEMICAL INDUSTRY

"Half of the nation's employment can be traced directly to the research laboratory. Teams of scientists and engineers are today creating tomorrow's jobs, tomorrow's industrial profits and tomorrow's comforts.

—ARMOUR RESEARCH FOUNDATION

FOR THE PEOPLE OF AMERICA CHEMICAL INDUSTRY GROWTH AND RESEARCH HAVE DEVELOPED



These benefits are described in some detail on the following pages.

CHEMICAL RESEARCH CREATES NEW PRODUCTS

For the industry as a whole it has been estimated that 40% of 1951 sales were in products that did not exist in 1936.

In 1952, sales of agricultural chemicals that were not out of the development stage 10 years before reached $90 million.

One chemical manufacturer reports half his sales in 1951 were from products unknown 10 years before.

Another estimate: four out of five medicines and drugs widely used today were unknown 10 years ago.

Out of a total of 8,000 chemicals listed in the 1952 Merck index, an authoritative catalogue of chemicals produced commercially, 2,900 did not appear in the 1940 edition.

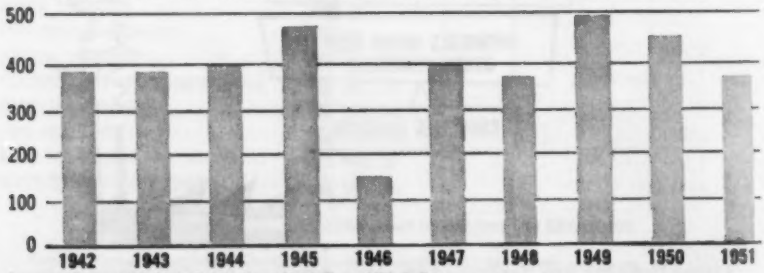
One chemical manufacturer of more than 400 products introduced 29 new products in 1951 and announced that 50 more had been brought to pilot plant stage.

In the course of research, new organic chemicals are made in the laboratory at the rate of 10,000 and more a year. To date an estimated 300,000 organic compounds have been synthesized. Many of these do not find immediate uses, but screening programs are constantly finding applications for some of these chemicals.

Some chemical companies introduce 10 to 30 new products each year. Many of these have been under development from seven to 10 years.

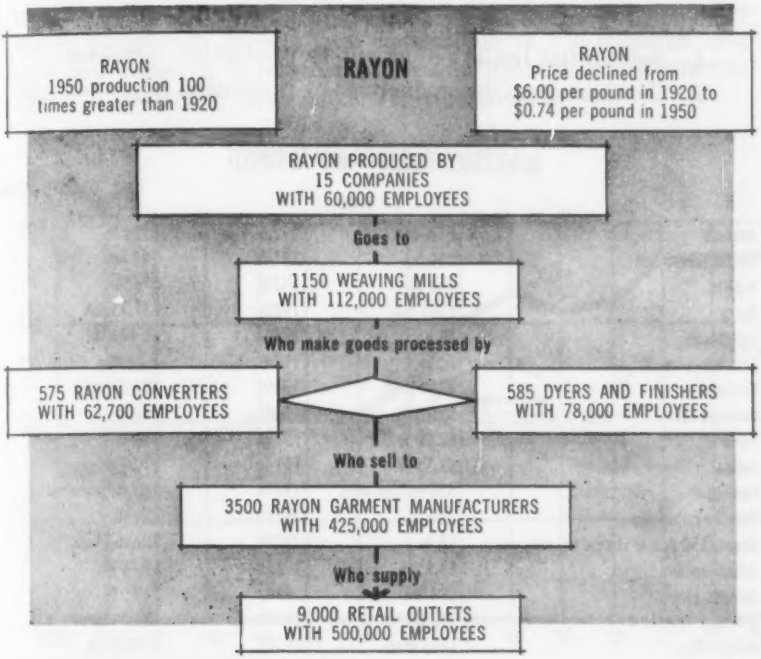
New products are the visible results of research, the essential vitamin without which the body of industry loses its vitality and dynamic character.

NUMBER OF NEW CHEMICAL PRODUCTS INTRODUCED FROM 1942 TO 1951



Source: "New Chemicals for Industry," McGraw-Hill & Co.

CHEMICAL INDUSTRY'S PRODUCTS CREATE NEW INDUSTRIES AND NEW JOBS


RAYON
1950 production 100 times greater than 1920
RAYON
RAYON
Price declined from $6.00 per pound in 1920 to $0.74 per pound in 1950
RAYON PRODUCED BY 15 COMPANIES WITH 60,000 EMPLOYEES
Goes to
1150 WEAVING MILLS WITH 112,000 EMPLOYEES
Who make goods processed by
575 RAYON CONVERTERS WITH 62,700 EMPLOYEES
585 DYERS AND FINISHERS WITH 78,000 EMPLOYEES
Who sell to
3500 RAYON GARMENT MANUFACTURERS WITH 425,000 EMPLOYEES
Who supply
9,000 RETAIL OUTLETS WITH 500,000 EMPLOYEES

Illustrating how rayon moves in commerce, a cone of yarn was recently traced from the winding machine in the chemical plant through 10 businesses in five states. It reached the retail store dress rack 47 days after it left the factory.

Many firms handle other textile materials, and rayon is only one of a number of such materials which have been major factors in creating thousands of jobs.

PLASTICS

An industry in its infancy 20 years ago has grown to giant size.

PLASTIC MATERIAL MANUFACTURERS
34 Chemical Companies
20,000 Workers

MOLDERS AND EXTRUDERS
1,300 Plants
30,000 Workers

FABRICATORS
1,500 Plants
More than 5,000 Workers

LAMINATORS OR REINFORCED PLASTIC MANUFACTURERS
50 Companies
6,000 Workers

PLASTIC FILM AND SHEETING MANUFACTURERS
1,500 Plants
20,000 Workers

New Products = New Jobs

The production and sale of new chemical products introduced since 1939 have created an estimated 100,000 new jobs throughout the chemical industry.

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LOWER PRICES FOR MANY CHEMICALS HAVE BEEN ACHIEVED THROUGH RESEARCH AND DEVELOPMENT

Chemical price reductions have been made possible in two ways:

1. Substantial initial reductions as production increases.
2. Continuing smaller reductions by processing improvements.

WHOLESALE PRICES—NOT ADJUSTED

	Then		Now*
Acetone	21¢ lb.	(1920)	8½¢ lb.
Ammonium sulfate	$59 ton	(1914)	$44 ton
Aspirin	95¢ lb.	(1920)	55¢ lb.
Borax	$165 ton	(1920)	$37.75 ton
Cellophane	$2.65 lb.	(1924)	55-60¢ lb.
Chlorine—liquid	8¢ lb.	(1920)	2.7¢ lb.
Cortisone	$200 gram	(1949)	$9.60 gram
Fuchsine dye	$1.75 lb.	(1920)	98¢ lb.
Furfural	$2.00 lb.	(1929)	15¢ lb.
Iodine	$3.55 lb.	(1914)	$2.55 lb.
Penicillin	$50 million units	(1944)	25¢ million units
Phthalic Anhydride	60¢ lb.	(1920)	22¢ lb.
Rayon (150 denier viscose weaving yarn)	$6 lb.	(1920)	78¢ lb.
Sulfanilamide	$3.15 lb.	(1937)	$1.40 lb.
Sulfuric acid	$24 ton	(1920)	$20 ton
Synthetic Vitamin A	55¢ million units	(1949)	12¢ million units
Vitamin B_{12}	$985 gram	(1950)	$295 gram

Source: Oil, Paint and Drug Reporter; Merck & Co., Inc., E. I. du Pont de Nemours & Co., Inc., Quaker Oats Co.; Textile Economics Bureau.

* (Jan. 5, 1953)

EFFICIENT PROCESSES BASED ON DIFFERENT RAW MATERIALS DROP PRICES

Chemical Price Drops as Cheaper Raw Materials are Employed, with Improved Processing

ACETONE

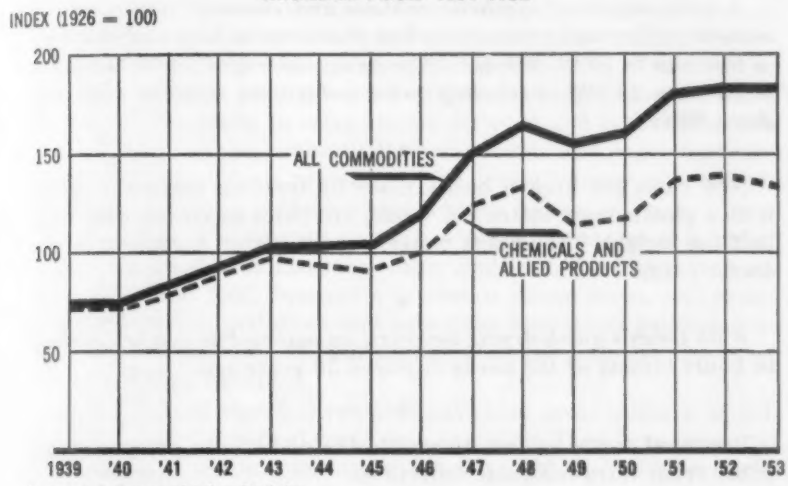
Before World War I	1916	1928
Made by wood Distillation	Made from Corn	Made from Petroleum (Propylene)
		Declining Prices
Price high and variable	1920—21¢	1929—15¢
	1921—12¢	1932—10¢
	1923—25¢	1936— 8¢
	1925—12¢	Stable Prices
		1940-50—7¢

Source: Oil, Paint and Drug Reporter for years given; Oostermeyer, Address before Cleveland Chamber of Commerce, April 1951.

COMPETITION AND RESEARCH KEEP PRICES LOW

According to the U.S. Bureau of Labor Statistics, chemicals have increased less in price during the last ten years than any other major commodity group. Keen competition in the industry, plus continual research to improve processing methods and production facilities, is largely responsible for this trend.

WHOLESALE PRICES 1939-1952



Source: U.S. Bureau of Labor Statistics.

PURCHASING POWER OF THE DOLLAR IN TERMS OF CHEMICALS AND OTHER COMMODITIES

Index Numbers

	April 1939	April 1942	April 1946	April 1948	April 1950	April 1952
Chemicals and allied products	100	127.8	126.4	180.9	153.9	175.4
Farm products	100	164.1	211.1	293.1	250.0	296.9
Foods	100	169.9	190.7	304.1	299.8	314.5
Textile products	100	146.0	161.3	250.2	203.9	230.5
All commodities	100	129.5	144.6	213.9	200.5	229.8
Hides and leather products	100	131.1	131.8	205.7	197.4	189.4
Fuel and lighting materials	100	105.9	117.3	179.3	178.3	187.7
Metals and metal products	100	110.4	115.7	167.2	179.6	203.9

Source: U. S. Bureau of Labor Statistics, Wholesale Price Index for respective periods converted to base of April 1939 as 100.

FARM CHEMICAL PRICES DOWN

In 1919 a unit of plant food cost farmers an average of $4.66; in 1945 the same unit cost only $1.78.

Fertilizers containing about 50% more plant food than 25 years ago are available today, yet they sell for considerably less.

CHEMICAL INDUSTRY IMPROVES PRODUCTS IN REGULAR USE

Supplying nitrogen to growing plants in high concentration through the leaf system is sometimes twice as efficient as putting the nitrogen fertilizer in the ground. This is made possible by spraying plant foliage with urea formulations.

A wide variety of synthetic rubbers and chemical treatments of natural rubber make tires today last five times as long and cost half as much as in 1920. Mileage 30 years ago averaged 5,000. Today it is close to 25,000. Excluding price reductions, mileage costs are down 80%.

New casts for broken bones, made by treating plaster of paris with a plastic resin instead of water, are twice as strong with only half the weight. They resist water, permit better X-rays, save the doctor's time.

With today's quick-drying lacquers, an automobile can be finished in hours instead of the weeks required 30 years ago.

Improved forms of insulin enable the diabetic to get prolonged effect from intra-muscular injections.

Originally penicillin was rapidly excreted from the body. Present modifications are retained for longer periods of time, so that smaller or less frequent doses are needed.

Chemistry has also improved the paint brush. Synthetic bristles have to a large extent replaced natural hog bristles from Northern China. New plastic handles last longer than wood and resist cracking and splitting.

Engine oils that stand up under high temperatures and keep free flowing at sub-zero temperatures have been made possible by chemical additives.

Research is constantly improving soaps and cleansers, adding chemicals that brighten fabrics, suppress bacterial growth, and give better detergent action.

CHEMICAL INDUSTRY PROMOTES CONSERVATION

Chemical research in the field of synthetics has made outstanding contributions to industry and the public. By transforming plentiful raw materials into thousands of compounds that do the job of scarce natural materials, chemicals are conserving vital resources. In many cases, the synthetics thus created have desirable properties not found in natural materials and have led to entirely new uses.

• First in volume among synthetics, and second only to textiles in value, plastics and synthetic resins today find multiple uses as replacements for natural materials in the form of sheets, rods and tubes, and in molded, cast and extruded shapes of all kinds. For example, plastics take the place of wood and are used in walls, doors and furniture, in resin-bonded plywood and in wallboard. In paints and coatings, rubber, adhesives, textile and paper coatings, synthetic resins have provided a far wider variety of products from which to choose the best for a given job.

• In terms of number of people benefiting, the chemical industry exerts the greatest influence in conserving food. Agricultural chemicals and plant food, fumigants to protect stored crops, and chemical aids to the preserver and processor have been estimated to increase the quantity of food that reaches the ultimate consumer by as much as one-third.

• Products of chemical research have also saved millions of dollars in growing non-food crops such as cotton. They have improved the quality of leather, and increased the yield of forest products. Chemicals also aid conservation by extending the useful life of natural materials—wood, leather, metal, cotton and wool.

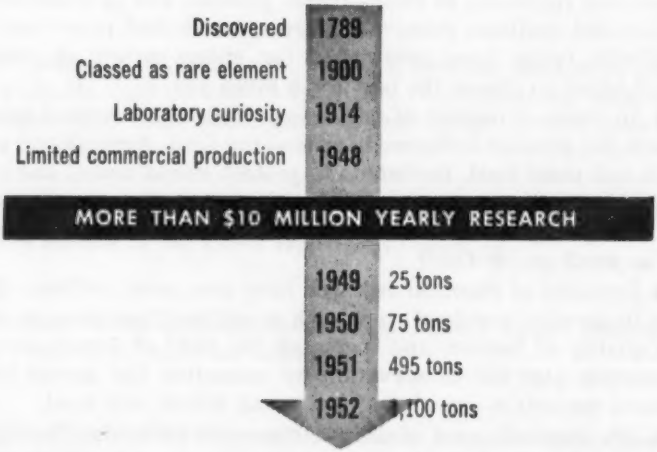
• The increasing use of dithiocarbamates for controlling fungus diseases of agricultural crops has released at least 2 million pounds of copper for other uses.

• Chemical adhesives are taking the place of tin solder in some operations, aluminum and cellophane stretch supplies of tin for foil, and synthetic resin can liners mean still another saving of tin. Plastics to some extent can be used in place of lead for cable sheathing. In some electrical equipment, chemically-produced aluminum can take the place of copper.

• In 1921, aluminum and plastics accounted for less than 20% of total supplies of non-ferrous metals and plastics. Greatly increased production of aluminum and plastics since 1930 has supplemented supplies of copper, tin, nickel, zinc and lead. In the mid-'30s, magnesium further increased the importance of light metals and plastics. By 1949, combined production of aluminum, magnesium and plastics exceeded 70% of the total volume of nonferrous metals and plastics, conserving scarce metals.

CHEMICAL INDUSTRY DEVELOPS HITHERTO UNUSED NATURAL RESOURCES

TITANIUM: Ti — Element No 22, Atomic Weight 47.90, Valence IV. "A widely distributed, dark-gray metallic element found in small quantities in many minerals. It has no important uses." —Funk and Wagnall's Standard Dictionary (1937)



THESE PROPERTIES	INDICATE	EXTENSION OF THESE USES
Light weight, high strength		Aircraft structural parts
Resistance to high heat		Aircraft power plants
Resistance to chemical attack		Chemical processing equipment
Corrosion resistance		Marine equipment
		Ordnance, air-borne equipment
		Alloys

Sources: U. S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, Mineral Market Reports, MMS No. 2113, Ralston and Czervenyak, Bureau of Mines, Washington, D. C.; "Industrial and Engineering Chemistry, Vol. 42, p. 214, February 1950.

CHEMICALS WHICH HELP OTHER INDUSTRIES

Just as most branches of modern science are inseparable from chemistry, so almost every manufacturing industry today relies upon products of the chemical industry.

MAJOR CHEMICAL-USING INDUSTRIES	Value of all chemicals consumed—1947 (millions of dollars)
Chemical industry	$2,655
Food and kindred products	1,451
Agriculture and fisheries	830
Textile mill products	800*
Rubber products	604
Petroleum and coal products	213
Paper and allied products	183
Electrical machinery (except motors and generators)	178
Miscellaneous manufacturing	167
Apparel	142
Leather and leather products	126
Stone, clay and glass products	116
Motor vehicles	111
Iron and steel	99
Printing and publishing	97
Non-ferrous metallurgy	85

Source: United States Department of Labor, Bureau of Labor Statistics, Division of Interindustry Economics, October 1951, "Interindustry Flow of Goods and Services by Industry of Origin and Destination, 1947."

* 1950 consumption of chemicals by the textile industry was estimated at $1,140,000,000. (See Chemical Engineering, July 1952, p. 163.)

It would be almost impossible to set down all the ways in which the manufacturing industries use chemicals. A few representative industries—rubber, pulp and paper, steel, plastics, petroleum, electrical equipment, containers and non-ferrous metals—have been selected to show the importance of chemicals to the entire industrial economy.

Chemical contributions to food, health, clothing and other needs and conveniences in everyday life are discussed in Section III.

Rubber

Rubber products are to a large extent products of chemistry. The achievements of the rubber industry in extending supplies of natural rubber and producing more synthetic rubber for defense and home needs have been dependent upon chemicals.

The rubber products industry uses half a million tons or 93% of the annual production of carbon black, a chemical product made from natural gas. Carbon black gives body, and imparts resistance

to wear and abrasion. In 1949, 53,000 tons of sulfur were used in vulcanizing rubber to give it toughness, elasticity and moldability.

Antioxidants prolong the useful life of natural rubber. Accelerators speed up curing time and make possible faster production. The creation of the modern long-wearing passenger car and truck tire is largely an achievement of chemical technology.

Conveyor belts that carry hot coke, hoses that resist chemical corrosion, and oil-resistant boots are some of the newer articles brought about by chemical research.

Pulp and Paper

The pulp and paper industries are highly dependent on a great volume and variety of chemicals. They are major users of chlorine for bleaching, caustic soda, sulfur dioxide and sodium sulfate for digesting wood to pulp, and a number of compounds for use in coating and sizing papers. Moisture resistance is important in some papers, like that used for paper cups and tubular containers, kraft bags, checks and ledgers. Synthetic resin sizes increase water resistance and wet strength. Other papers, like towels and tissues, must be very absorbent, and are chemically treated to make them "drink up" water rapidly.

Blueprint papers take on a deeper color and reproduce sharply when given a chemical precoat. Coating lacquers for paper produce such effects as high gloss, or the appearance of leather.

Steel

Without alloy chemicals, production of steel with present-day qualities would be impossible. Steel might well be called an outstanding product of metallurgical chemistry.

The various operations of steel manufacture involve not only a series of high-temperature chemical processes, but also the use of a large number of chemicals to give steels special qualities.

The steel industry uses about three-quarters of a million tons of sulfuric acid at coke ovens a year. About 1.5 million tons are used for scale removal. About 10,000 tons of caustic soda are used for removing phenol in coke ovens. More than 300,000 tons of fluorspar (calcium fluoride) are used in treating slag.

Sulfuric acid is used in the steel pickling bath to remove rust and mill scale. Recently the addition of sodium ferrocyanide to the bath has conserved steel.

Steel fabrication also requires chemicals. Nitrides harden steel for high-speed tools; synthetic phenolic-resin bonded sand molds improve appearance and reduce the amount of machining to cut costs of cast products. Chemical lubricants and coolants are used

in drawing and cutting operations. Degreasing and rust-proofing chemicals are then used to prepare the metal surface for finishing.

Plastics

Plastics attained considerable importance in World War I, but the big growth of the industry has taken place during the last decade. Thirty years ago production of plastic materials was a meager six million pounds. By 1941, it had grown to 428 million pounds. For 1951, The Society of the Plastics Industry, Inc., estimated that 4,000 companies in the United States made more than 2,200 million pounds of plastics from raw materials supplied by chemical companies, placing the industry in the billion-dollar-a-year class.

The principal reason why plastics have become a great new industry is that they offer properties not found in any of the traditional materials. They combine durability, beauty, light weight, inherent color, ease of fabrication, mechanical strength and excellent electrical insulating properties—all at reasonable cost. Present output of plastics exceeds that of any of the non-ferrous metals.

Petroleum

Large quantities of chemicals are fed into the operations which produce petroleum and convert it into gasoline, fuel and lubricating oils, and dozens of other useful products.

In 1951 the petroleum industry used more than 100 different chemicals in the production, refining and storage of gasoline, diesel fuel, heating oils, lubricants and waxes. The industry uses a million pounds of cracking catalysts each day to help break crude oil into various fractions. During 1951, 49,000 tons of hydrochloric acid were consumed, mostly to increase the flow of oil from wells. Large quantities of caustic soda, sulfuric acid and litharge are used in other operations.

An estimated $250 million worth of chemicals are used annually in preparing drilling mud, the material which loosens and removes borings from the cutting bit, and lubricates and cools it. Other chemicals are used in plugging compounds. An estimated 80 million barrels of crude oil a year could not be gotten out of the ground without chemicals to aid in its recovery.

Electrical Equipment

Chemical products are found in every type of electrical equipment from giant transformers and generators to the smallest home appliances. Resinous materials are the base of the insulating varnishes, wire enamels, and surface coatings on motors. Cloth tapes are chemically impregnated for windings. Many kinds of plastics serve insulating, structural or decorative purposes in the electrical field.

Synthetic rubbers, such as silicone, butyl, and nitrile, are used for gasketing, wire and cable insulation and couplings.

Both electrical and electronic devices employ silicones, chlorinated aromatic compounds, and fluorine-base chemicals as dielectric fluids and impregnating liquids. The oxides and carbides of many metals, such as magnesium oxide, have numerous applications for high-temperature thermal and electrical insulation.

Containers and Packaging

The rapid growth of the chemical industry and the increase in the number of products it supplies to industry have created many new types of containers and packaging materials for chemicals of widely varying properties.

The safe and economical shipment of chemicals has made great strides as research has brought along improvements in tank cars and better metal, fibre, paper, glass and plastic containers. These developments have helped to solve the packaging and transportation problems of other industries. In the course of research, the industry has promoted a simple system of precautionary labeling for chemicals that move in commerce and has worked closely with regulatory agencies, container manufacturers and customers for the most efficient shipment of its products.

Non-ferrous Metals and Minerals

More efficient methods for the chemical separation of cobalt, nickel and copper from their mother ores have done much to increase supplies of these vital metals. Chemicals have been used to improve the extractive processes for more than a dozen minerals, and have aided in recovering huge quantities of zinc, lead, gold, silver, garnet and barite that could not be obtained formerly.

Copper—Fifty years ago copper ores containing three per cent metal were considered too lean for working. Today, with chemically-improved extraction techniques, ores as low as one-half per cent are regularly used. Newer, more efficient chemical flotation agents have made it economical to rework tailings from earlier mining operations.

Although most metallic copper is obtained from ore concentrates by furnace methods, considerable quantities are extracted by leaching with sulfuric acid.

Refining of the purer grades such as the copper used in electrical equipment is accomplished by the use of electricity. Impure copper anodes dissolve in a chemical bath and pure copper is deposited on cathodes.

Magnesium—This new light metal was produced before World War II, but only to the extent of a few thousand tons a year.

Demand from the aircraft industry and the solution of production difficulties expanded the total capacity of the country's magnesium plants to 300,000 tons a year. Magnesium chloride in ocean or well-brine is treated with lime to precipitate magnesium hydroxide; the concentrated hydroxide is then converted back to chloride by hydrochloric acid. An electrical process then reduces the chloride to the pure metal.

Aluminum—Aluminum is obtained from its naturally-occurring oxide (bauxite) in a bath of molten fluorides (synthetic cryolite) by electric current. During World War II, chemical processes which permitted the use of lower-grade bauxite were developed. In 1951 aluminum production was estimated at more than 800,000 tons.

Others—Titanium metal, invaluable for jet-engines, is being brought to more economical commercial production by chemical industry research and development. This involves production under carefully controlled conditions and requires new materials of construction.

Zirconium has a big future because of its high-heat and corrosion resistance, and will assume greater importance as soon as chemical process research lowers costs.

CHEMICALS FAN OUT TO CONSUMER THROUGH INDUSTRY

As examples of how chemicals percolate through process, mechanical and fabricating industries to improve products for the consumer, the following housewares have recently had widespread consumer acceptance:

- Polyethylene, the plastic widely used for "squeeze" bottles and refrigerator containers, now appears in clatter-proof garbage pails that do not dent or corrode, are easier to keep clean.
- New chemical specialties easily remove burnt-on food and grease from ovens.
- Rug shampoos that can be applied at home in fully-ventilated rooms do a job that rivals professional cleaning.
- Furniture finishes that resist the action of alcohol, water and burning cigarettes are coming into wider use.
- A basket for an automatic washing machine, made from glass fiber and polyester resin instead of porcelain and steel, cuts costs 50%, reduces weight 50%.
- Aerosols, containers that use compressed gases to discharge materials, have lightened many tasks for the housewife. Paints, auto wax, insecticides, odor masking, moth-proofing and moisture-proofing chemicals, and dessert toppings can now be easily applied with aerosols. The man of the house can use aerosol dispensers for shaving cream and trim the Christmas tree with artificial snow.

CHEMICAL INDUSTRY SPREADS CONSUMER BENEFITS

The higher standard of living for the American people during the last 15 years in spite of war and waste has been aided by chemical technology. The meteoric rise of synthetic fibers, synthetic rubbers, agricultural chemicals and medicinals has been rather well publicized. Equally interesting are the gains for heavy chemicals which supply the starting materials for countless consumer products both within and outside the chemical industry.

Through familiar items like medicinal chemicals, cosmetics, toiletries, paints, detergents and photographic film, the consumer is an indirect buyer of heavy industrial chemicals used in the production of intermediates, which in turn fan out to myriad uses from dentifrices to textile finishes.

Heavy Chemical	Per capita use (pounds)	End Uses
CAUSTIC SODA	1939— 16 1951— 41.31	Rayon manufacture Cotton mercerizing Wearing apparel
	158%	Paint pigments Metal cleaning Rubber reclaiming
SULFURIC ACID	1939— 73.7 1951—177.9	Fertilizer manufacture Petroleum refining Steel pickling
	141%	Coal products Textile dyeing and finishing Rayon and cellophane manufacturing Paint pigments
CHLORINE	1939— 7.9 1951— 33.5	Water treatment Pulp and paper bleaching Cleaning fluid manufacture
	324%	Refrigerant manufacture Disinfectants Textile bleaching
AMMONIA	1939— 4.8 1951— 23.6	Fertilizer manufacture Wool scouring Vat dye making
	392%	Flame proofing textiles Metal hardening Rubber vulcanizing Plastic and resin manufacturing Petroleum refining

Source: Chemical and Engineering News, June 2, 1952, p. 2352.

Section One

GROWTH OF THE CHEMICAL INDUSTRY

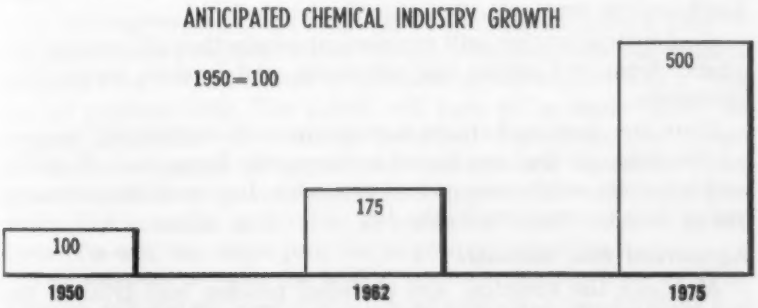
Chapter Four

OUTLOOK FOR FURTHER PROGRESS

"Chemistry is a creative science, and the first chapter of its Book of Genesis is yet to be written."

ARTHUR D. LITTLE

The phenomenal rise in chemical manufacturing, which has made it today the industrial backbone of the country in war and peace, shows no signs of leveling off. The outstanding contributions of chemical research in recent years suggest an even greater field of usefulness for chemicals in the near future. For the long-term outlook, the current magnitude of research in the chemical industry and the problems that it is being called upon to solve foreshadow the prime importance of chemical products in whatever direction technology takes.



Source: Ewell, Chemical and Engineering News, Dec. 10 '51, p. 5229; The President's Materials Policy Commission, "Resources for Freedom," Vol II, June 1952, p. 105; "Business Week," May 24 '52, p. 108.

According to some business forecasts, the chemical industry in the next decade will increase 75%, growing four to five times faster than the rest of industry. A 400% increase has been projected for 1975.

Synthetic fibers, now comprising 20% of all textiles, are expected to be 40% of total textile consumption by 1975.

Plastic and synthetic resin production, already greater than any non-ferrous metal, is expected to increase 800% in the next quarter-century.

PROSPECTS FOR CHEMICAL INDUSTRY RAW MATERIALS

Traditionally, the chemical industry has sought out abundant raw materials and devised new processes to use alternative materials whenever scarcities threatened. Air, water, sand and salt are boundless resources. Petroleum, natural gas and coal will continue to be freely available for many years. Agricultural products are renewed constantly. The industry faces no major long-term supply problem for any of these basic materials, and in this respect is in a far better position than the chemical industries in other nations of the free world.

Petroleum as a raw material for chemical production is expected to increase from 0.7% of total production in 1950 to 2.7% of total production in 1975, and will furnish six times the current volume of chemicals for making synthetic plastics, rubbers, fibers and solvents. It is estimated that such products increase the raw material value approximately 12 times; conversion to fuels increases the value only two and one-half times.

In 1975 petroleum is expected to supply

2 million tons of non-cellulosic synthetic fibers
2 million tons of synthetic detergents
1.2 million long tons of synthetic rubbers

Natural gas will continue as an important raw material for carbon black, sulfur, ammonia, and organic chemicals.

Coal hydrogenation will supplement production of benzene and phenol from coal coking and petroleum, and produce many other chemicals.

Sea water, now used chiefly for bromine and magnesium, contains all the minerals that are found in the earth. Extraction of metals and minerals awaits economical processes. Improved ion-exchange resins may be found to do the job.

Agricultural Raw Materials

Although the chemical and chemical process industries in the last 20 years have been utilizing large quantities of farm crops and residues, there are still an estimated 200 million tons of agricultural by-products a year that might serve as low-cost source materials for chemical products.

The search of the chemical industry for new materials and more inexpensive ways to use old materials is stimulating the development of new industrially useful agricultural crops. A number of these are expected to provide opportunities for farmers and small businesses. Farm-based industrial products may become even more important in the future as demand provides the incentive, and technology the means, of substituting renewable products of the soil for exhaustible materials.

CONTINUING PROGRESS IN SATISFYING BASIC HUMAN NEEDS

Health

Even with recent medical advances, the Federal Security Administration estimates that the cost of illness and premature death in the United States amounts to $38 billion annually. Much of it can be reduced by science. This is the challenge which will occupy the medical profession and research teams in universities, the chemical industry and government agencies.

Better control of the degenerative diseases will be obtained as chemical and allied research concentrates on biology, biochemistry, physiology and related sciences.

Research screening programs on the thousands of chemical compounds that have been made but not thoroughly investigated and the synthesis of many more new compounds will undoubtedly yield many effective new chemical weapons for the fight against infectious and degenerative diseases.

The use of medicinal chemicals of all kinds is expected to increase greatly. Many will be taken for promoting good health rather than for curing disease. New antibiotics, plasma volume expanders, synthetic hormone compounds and new chemotherapeutic agents will make great inroads on the forces that prey on man's health.

Food

In 1950 cultivated crops took out of the soil six million tons of nitrogen; nature replaced three million, and chemicals one million. Withdrawing from the bank at the rate of two million tons a year cannot continue long. The deficit will have to be made up by increased quantities of chemical fertilizer. Advancing knowledge of elements needed in very small amounts for optimum plant growth is creating special fertilizers to upgrade farms and pasturelands. For example, as little as 28 ounces of cobalt an acre, in the form of a salt, has made poor range good for steer feeding.

The necessity to raise the level of food production from existing acreage will dictate even wider use of pesticides, weed-killers and other agricultural chemicals. The damage caused to agriculture by weeds, insects and fungi costs each individual in the United States about five dollars a month.

Photosynthesis, the process whereby plants use light from the sun to build carbohydrates, fats and proteins is just beginning to get intensive scientific study. The possibility of imitating natural processes under factory-controlled conditions to speed the production of man's essential foodstuffs may not be realized in this generation, but progress is being made. Meanwhile, chemists are studying the use of light as a means for promoting complicated chemical reactions.

Synthesis of fats and proteins from low-cost carbohydrates and other intermediates will hold food costs down. Progress in fermentation with bacteria and yeasts promises to develop new foods, industrial products and medicinals.

Clothing

A number of the newer synthetic fibers are still being improved; others with a wider range of desirable properties are under investigation. Research on chemical modification of the natural fibers will also bring about qualities not now obtainable in cotton and wool. Greater serviceability, beauty and convenience in maintenance for all textiles are indicated.

CHEMICAL FIBER GROWTH

(millions of pounds)

	1951 Production	1953 Production (Estimated)	% Increase
Cellulosics			
Rayon	865	1,129	30
Acetate	429	573	33
Non-Cellulosics			
Nylon	125	250	100
"Dacron" Polyester fiber	3	35	1,066
Saran	18	20	11
Acrylic fibers	13	95	631
Vicara	5	20	300
Glass fiber	40	65	62

Source: Fortune, May 1952, pp. 130-1.

Materials

Wood will continue to be a primary material for shelter and construction. Two billion cubic feet of saw timber material, or about 20% of the annual cut, is destroyed by insects and tree diseases. Better chemicals to control pests and chemicals to increase the growth of forests will considerably swell our supply of scarce woods. Chemical preservatives to minimize rot and termite losses will conserve wood; only about 2% of lumber used for construction is now chemically treated.

Cellulose from purified wood pulp—a basic raw material for the manufacture of rayon, cellophane, photographic film, sausage casings, lacquers, plastics, smokeless powder and other products—is consumed at the rate of about a million tons a year. Chemicals to debark pulp logs, and processes recovering large amounts of chemicals in spent liquors from pulp mills, are needed to maintain the economy of wood products. Already to some extent plastics, molding powders, vanillin, water-treatment chemicals, tanning agents, adhesives, binders, dispersing agents, ethyl alcohol and yeast have been derived from spent liquor.

Glass fiber for a variety of construction parts and large plastic shapes will be an innovation in residential and business structures.

Plastics are continually finding new fields of usefulness in industrial and consumer applications and this pattern is expected to foster growth of many types at an accelerated rate as production of other types levels off. Slated for big increases are polystyrenes, used in molding large shapes, and vinyls, used in dozens of household and consumer articles. Polyethylene and silicones, because of their unique properties, are expected to grow rapidly. Plastic piping to supersede metal in many uses, and more plastic packaging and container materials for food will be big volume applications. For all types of plastics, total production of nine billion pounds has been predicted for 1975. New plastics will, of course, be developed in this period. Plastics will continue to be one of the largest consumers of chemicals from petroleum and natural gas.

GROWTH AHEAD FOR PLASTICS

(millions of pounds)

Types	1951 Production	Est. 1955 Requirements	% Increase
Phenolics	474	700	48
Polystyrene and styrenes	394	800	103
Urea and melamine	238	400	68
Vinyls	476	800	68
Cellulosics	117	150	28
Polyesters	14*	300	2,043
Alkyds	440	700	59
Polyethylene	85*	300	253
Coumarone-indene	177	200	13
Silicones	1	50	4,900
Methacrylates	n.a.	100	...
Others	n.a.	100	...
Total	2,416	4,600	90

n.a.—not available * Estimated.

Sources: Modern Plastics, June 1952; U. S. Tariff Commission, Synthetic Organic Chemicals, Report No. 175, Second Series, pp. 44, 46, 179.

Metals: Since all or nearly all of our uranium, natural rubber, manganese, industrial diamonds, chrome, cobalt, nickel and tin come from outside the United States, one of the big challenges of the future for the chemical industry is to develop alternative materials, or methods for extending supplies.

Chemically-processed metals are slated for big expansion in the next 25 years, according to reports of The President's Materials Policy Commission. Titanium will be up 324%, cobalt 344%, magnesium 1,845%.

Corrosion prevention is a big field for chemical research. The direct loss for iron and steel rusting was estimated at $2 billion

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a year in 1948. If the cost of coatings and metal treatments are included, about $6 billion more must be added to the annual cost of metal corrosion.

Transportation and Communication

A steady improvement in fuels and more efficient use of them is forecast. The greater use of light metals in transportation equipment is also expected to hold costs down. One development in rubber technology will be the adaptation of new super-polymers to heavy duty tires that will stand up under heavy loads at very high rates of speed for long periods of time. Plastics will play an increasingly important role in transportation and communication equipment of all kinds.

Atomic Energy

Atomic Energy Commission reports state there are five principal capabilities of fission products: They can (1) kill organisms, (2) induce chemical reactions, (3) ionize gases, (4) activate phosphors, and (5) produce rays which can penetrate solids.

Some uses these properties suggest: radiography, sterilizing foods and drugs in containers without heat; producing new or cheaper chemicals, improved static eliminators and fluorescent lights, and new types of luminescent paints and tiles; tracing of pipeline flows. Some of these are speculative; others already have been developed, using other sources of radiation.

ASSIGNMENT FOR THE FUTURE

Scientists can make gasoline from coal, cattle fodder from sawdust, and generate electricity from atomic energy, but presently the processes are not economical enough to compete with existing methods. Coal hydrogenation is a revolutionary process from which much may be expected. To take abundant raw materials and transform them into products that serve the needs of industry and the consumer at the right price is the challenge which the chemical industry faces and can be expected to meet.

A large-scale attack on the nature and control of virus diseases, mental disorders, cancer, heart and circulatory diseases through an extension of basic research is perhaps the most important assignment. To make the human life-span longer and more useful, the chemical industry must enlist the special aptitudes of larger numbers of young scientists. The virility and momentum of chemical enterprise must be maintained so that men of promise will have the incentive to fill the great gaps that exist in our knowledge of biologic science.

Section Two

HOW THE CHEMICAL INDUSTRY OPERATES

Chapter Five

DISTINCTIVE CHARACTERISTICS OF THE INDUSTRY

Chemical Products Cover a Broad Field

Some industries start with a number of raw and semi-finished materials to make a single product, like the automobile. Others take a single raw material like petroleum and make a number of end-products out of it. But the chemical industry is much more complex. It works with almost every kind of raw material—products of the mine, forest and farm; water, air, limestone, coal, salt, sand, sulfur and petroleum.

By combining and rearranging simple molecules the industry makes heavy chemicals and hundreds of important intermediates—by a bewildering number of routes and processes. These serve as building materials for the 7,000 different end-chemicals which are currently being made commercially. These end-products then find numerous and varying uses.

For example, hydrazine, a chemical made from ammonia, plays two widely differing roles. It is in great demand as a fuel for propelling rockets. It is also the starting material for the manufacture of isoniazid, a drug that looks promising against pulmonary tuberculosis. Chlorine, ammonia, sulfuric acid and other heavy chemicals have thousands of different end-uses in industry.

High Capital Investment Per Worker

Research to improve processes for making old and new chemical products is continually increasing the amount of capital invested per worker. Automatic and semi-automatic controls and the development of continuous processing have increased production.

High productivity, made possible by expensive instrumentalized plants, has contributed to lower prices for many chemicals while other commodity prices trended upward in the last decade. As an extreme example of heavy capital investment per worker, one specialized plant that will employ only 30 for round-the-clock operations recently cost $16 million.

CAPITAL INVESTMENT PER PRODUCTION WORKER FOR SOME MANUFACTURING INDUSTRIES FOR 1948

(Latest comparable figures available)

Chemicals and products	$16,882
Food and beverages	10,872
Automobiles	9,011
Iron and steel, nonferrous metals and products	8,066
Machinery, except electrical	7,795
Electrical machinery and equipment	7,641
Transportation equipment, except automobiles	7,161
Textile-mill products	5,064

Source: "The Conference Board Business Record," National Industrial Conference Board, Inc., Vol. IX, No. 7, July, 1952, p. 267.

An analysis of eight representative chemical companies shows an average operating investment per employee (salary and wage rolls) of $23,300 in 1950.

The amount of capital investment required depends to a large extent on the chemicals manufactured. The lowest, for explosives, shows an operating investment of $17,100 per worker. The highest, for a manufacturer of ammonia, works out to an operating investment of $42,500 per worker.

U. S. MANUFACTURERS' CAPITAL EXPENDITURES FOR NEW PLANT AND EQUIPMENT—1945-1953

	Total Capital Expenditures 1945 - 1953 (millions of dollars)	(per cent of all manufacturing industry)
Petroleum	$16,734	21.4%
Chemical and allied products	8,887	11.4
Iron and steel	7,389	9.5
Other manufacturing industries	45,125	57.7
	$78,135	100.0

1945-1952, actual
1953, estimated

Source: U. S. Department of Commerce, Survey of Current Business, April 1952; Business News Reports, Release March 24, 1953.

Technical Service to Customers

Chemicals usually are sold direct by the manufacturer rather than through middlemen. Chemicals perform highly specialized functions, and the company that helps the purchaser use the product most efficiently gets the business. Technical service to the customer is therefore of the highest importance, and manufacturers' sales and promotion departments accordingly work directly and closely with the customer.

Widespread Competition

The industry is its own best customer and most active competitor. No one company has processes, equipment or raw material resources for making any major proportion of the chemicals in use today. This makes it necessary for hundreds of chemical companies to buy from hundreds of others. In addition, there is steadily increasing foreign competition in many chemical materials and products.

There are few of the 7,000 chemicals regularly produced in the United States that cannot be made from alternate raw materials and by several different processes. This makes for keen competition among chemical companies. Research for more efficient processes and cheaper raw materials militates against any exclusive control over a product or a market for very long.

Competition goes on at every level:

1. **Competition between products for similar markets: Glycerin, sorbitol, propylene and ethylene glycols, ethanol, methanol, isopropyl alcohol and pentaerythritol perform many of the same functions.**
2. **Competition between processes: Acetic acid is made from three different raw materials by 10 different processes. Ethylene glycol, widely used as an anti-freeze, is made by three different processes. Phenol is also obtained by three different processes.**
3. **Competition between raw materials:**
   Petroleum is competitive with natural fats for detergents.
   Coal is competitive with petroleum as a source of phthalic anhydride.
   Petroleum is competitive with molasses for ethyl alcohol production.
4. **Usual sales competition between companies. This is intensified by the interproduct, process and raw material competition.**

Here is a breakdown of the number of competitors one diversified chemical manufacturer faces in different fields:

Plastics, 18 other manufacturers; sulfuric acid, 20; photo chemicals, 12; explosives, 14; pigments, 17; dyes, 47; dye intermediates, 53; antifreezes, 245; paints, 1200.

Competition in the chemical industry is reflected in the fact that the three chemical companies with largest sales account for a much smaller share of industry volume than is the case with the three largest companies in many other industries. In recent years, total sales of these three chemical companies have amounted to only about 15% of aggregate chemical industry sales.

High Obsolescence; Rapid New Product Growth

Chemical industry research teams are continually striving for new processes that put current techniques out of business and improve the performance of already satisfactory products. It usually takes years to create and develop successful new chemicals and processes, but once launched they can change the chemical market suddenly and drastically.

A dramatic example of chemistry's potential was the brilliant feat of Chaim Weizmann in 1916. Inadequate acetone production had threatened to deprive the British Army of military powder and propellants. Weizmann relieved the bottleneck in just 30 days with a new process for acetone, employing fermentation of grain.

Pneumonia serums developed in the early '30s, were a notable advance in the treatment of this disease. Within a few years, however, they were supplanted by many-times more effective sulfa drugs, which were largely replaced by even more effective penicillin and other antibiotics beginning in the mid- '40s.

Ten years ago antibiotics did not appear on any company's order books; in 1952 their retail value was about $650 million.

Other chemical groups show rapid growth rates. Between 1940 and 1951, the average increase per year for all types of synthetic rubbers has been 67.5%; detergents, 41.4%; man-made fibers other than rayon, 40.5%; plastics and synthetic resins, 21.8%; and nitric acid and synthetic ammonia, 15.7%. Since 1925, for the industry as a whole growth has been averaging 10% a year, compared to 3% for all manufacturing.

During the next few years, according to the U. S. Department of Commerce, chemical manufacturers expect to devote about one-half of their total investment, and three-fourths of their total expansion expenditures for new products.

Even some of the large-volume basic chemicals have spurts of unusual activity as a result of cost-cutting process improvements or a new fast-moving derivative. For example:

Acetylene—which is commonly associated with automobile headlights around the turn of the century and welding operations—is an extremely versatile chemical. A raw material for certain plastics (the vinyls and acrylics), insect sprays, vitamins, aspirin, synthetic fibers, synthetic rubbers and industrial tapes, acetylene is becoming increasingly important as economical methods of making it from natural gas are worked out. The original and still important process is manufacture from calcium carbide, obtained from coke and limestone. Three hundred million pounds of acetylene were used for chemicals in 1950. Process improvements over a generation have made possible 60% greater production with 2% fewer workers.

♦

Research makes today's products obsolete tomorrow, spawns new industries overnight. Capital requirements for research, technical service and expansion have soared. When government and tax policies are favorable, however, the gains in a venturesome industry are commensurate with the risks. The consumer, in any case, has been benefited to a degree unknown before in history.

Section Two

HOW THE CHEMICAL INDUSTRY OPERATES

Chapter Six

RAW MATERIALS; THE INDUSTRY AS A PURCHASER

Raw Materials

The chemical industry is a volume user of raw materials of many kinds. To a large extent, research has developed the freely available materials of the earth—air, water, mineral and agricultural products, coal, petroleum and natural gas—and through modern chemical processes has transformed them into innumerable products of benefit to man.

RAW MATERIALS	CHEMICAL PRODUCTS	
Inorganics	Adhesives	Inks
(Nonmetals)	Agricultural Chemicals	Ion-Exchange Resins
Limestone, Sulfur,	Ammonia	Paints, Varnishes and
Phosphate, Salt,	Anti-Freeze	Lacquers
Sand, Bauxite	Bleaching Compounds	Paper Chemicals
(Metals)	Cement	Petroleum Additives
Lead, Zinc, Copper,	Cleaning and Polishing	Photo Supplies
Iron, Etc.	Compounds	Plastics and
Air	Cosmetic and Toilet	Synthetic Resins
Water	Preparations	Rubber Chemicals
Organics	Drugs and Medicines	Soaps and Detergents
(From Coal)	Dyes	Solvents
Coke, Benzene, Toluene,	Explosives	Synthetic Fibers
Napthalene, Etc.	Fertilizers	Synthetic Rubbers
(From Petroleum)	Flotation Reagents	Textile Chemicals
Natural Gas, Ethylene,	Hydraulic Fluids	Water Purfication
Propylene, Butylene,		
Toluene, Benzene, Etc.		
(From Agriculture)		
Fats, Molasses,		
Cellulose, Etc.		

Source: Leland, Chemical and Engineering Progress, October 1952, p. 529.

Organics

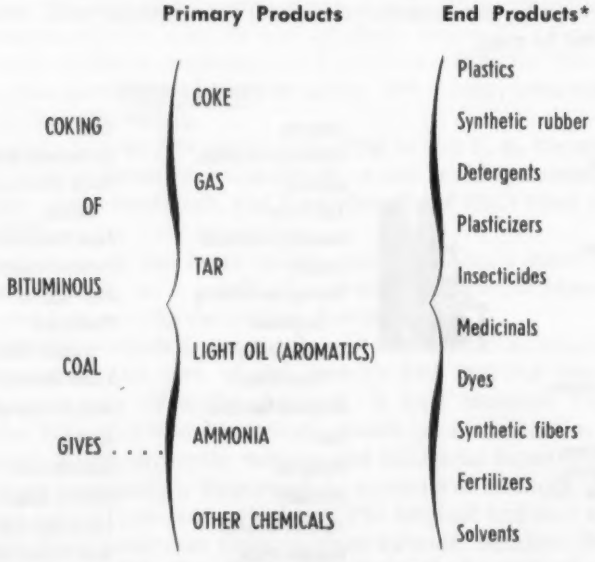
By carbonization of coal and by fractional distillation, catalytic cracking and reforming of petroleum, the industry obtains important organic chemicals and a host of intermediates which are the essential materials for making thousands of other chemicals. Within the last 25 years petroleum and natural gas have become the raw materials for more than 2,500 different chemical products. Coal is also the raw material for thousands of chemicals.

Inorganics

Sulfur, obtained from underground deposits in Texas and Louisiana by the Frasch process; salt from brine wells and mines; phosphate rock from Florida, Tennessee, and western deposits; limestone; potash from New Mexico; and other minerals and metals are raw materials for the manufacture of heavy chemicals and thousands of chemical products used by industry and consumers.

COAL AS A CHEMICAL RAW MATERIAL

The value of chemical products produced from coal (coke-oven operations) in 1951 was $323,934,359.



* These end products are also obtained from other raw materials.

In 1951 the most important intermediates produced by coking of coal were:

Phenol, 20 million pounds; cresols, 18 million pounds; benzene, 187 million gallons; cresylic acids, 13 million pounds; naphthalene, 387 million pounds; methanol, 136 million gallons.

Source: The President's Materials Policy Commission, "Resources for Freedom," Vol. IV, pp. 160, 161.

PETROLEUM AS A CHEMICAL RAW MATERIAL

In 1952 the petrochemical industry produced raw materials for 17 billion pounds of organic chemicals. It accounts for 65% of the ammonia, 70% of ethyl alcohol, 75% of acetic acid, and 15% of all nitrogenous fertilizers produced in the United States.

Primary Products		End Products*	
Cracking, Oxidation and Other Chemical Treatment of CRUDE OIL AND NATURAL GAS Give . . .	METHANE	SYNTHETIC FIBERS	AUTOMOTIVE CHEMICALS
	ETHANE	Nylon	Tetraethyl lead fluid and other gasoline additives
	PROPANE	Polyester	Anti-freezes
	BUTANE	Acrylic	Hydraulic fluids
	ETHYLENE	Acetate	Oil additives
	ACETYLENE	Saran	NITROGEN PRODUCTS (INCLUDING FERTILIZERS)
	BUTADIENE	SYNTHETIC RUBBERS	Insecticides
	NAPHTHA	GR-S types	Herbicides
	BUTYLENE	Nitrile types	Dyes
	PROPYLENE	Butyl	Miscellaneous solvents
	CYCLOPENTADIENE	Neoprene	PROTECTIVE COATINGS (INCLUDING SOLVENTS)
	ISOPRENE	PLASTICS, RESINS, PLASTICIZERS	Aromatics
	ISOBUTYLENE	Polyesters	Alcohols
		Polyethylene	Ketones
		Alkyds	Glycerin
		Vinyls	Others
		Epoxys	
		Polystyrene	
		Phenolics	
		Cellulosics	
		Phthalic Anhydride esters	
		Others	

* These end products are also obtained from other raw materials.
Source: The President's Materials Policy Commission, "Resources for Freedom," Vol. IV, p. 207.

About 40% of petrochemicals are currently made from natural gas. Carbon black, helium, sulfur and carbon dioxide for varied industrial uses are obtained by processing natural gas.

In addition to the hydrocarbons from petroleum, millions of tons of sulfuric acid, chlorine, lime and caustic soda are used in the manufacture of petrochemicals.

INORGANIC RAW MATERIALS CONSUMED IN CHEMICAL PRODUCTION

(Latest figures available)

Salt	10,326,358 short tons	Sodium nitrate	400,000 short tons
Limestone	6,675,000 short tons	Sand	189,000 short tons
Sulfur	1,765,000 short tons	Chrome ore	115,000 short tons
Phosphate rock	1,254,615 long tons	Bauxite	141,800 long tons
Lime	762,107 long tons	Fluorspar	89,000 short tons
Pyrites	847,700 long tons	Barites	81,000 short tons
		Potash (As K_2O)	66,000 short tons

Source: Minerals Yearbook for 1949, and industry sources.

Salt: Only four per cent of salt production is used for food seasoning. Industry uses nearly three and a half million tons a year for chlorine, caustic soda and bleaches, six million tons for soda ash and large amounts for processing textiles, leather and soap. Most industrial salt is obtained from underground brine wells.

Water: The chemical industry is a major user of water for cooling, power generation, washing and diluting. Water is also used as a source of hydrogen and oxygen.

Lime: Chemical industry requirements for lime are larger than those of agriculture and construction. Lime finds a multitude of uses in water purification, sugar refining, and manufacture of glass, steelmaking fluxes, glue and gelatin.

Sulfur: Although sulfur has direct uses in agriculture, pulp and paper, rubber and medicinals, more than 77% is used for production of chemicals, notably sulfuric acid. Sulfur dioxide is widely used in disinfecting, bleaching, preserving and refining.

Phosphorus: One of the essential elements needed by plants and animals, fertilizer uses account for large quantities of phosphate rock. By the electric furnace the rock is converted to elemental phosphorus, the source material for many chemicals used in industrial products and processing. The food, textile, glass, and explosive industries require phosphorus in some form.

Air: The atmosphere's principal elements, nitrogen and oxygen, are used for ammonia and nitric acid and oxygen production. More than 20 billion cubic feet of oxygen for medical and industrial uses were produced in 1951. In addition, neon, argon, krypton, radon and xenon—rare inert gases occurring in trace amounts in the atmosphere—are obtained from liquefied air.

Atomic energy materials: The chemical industry played a leading role in the processing and purification of uranium ores for the A-bomb. Continuous research by chemical companies on improving ore treatment and extractive processes is assisting the development of atomic energy.

HOW THE CHEMICAL INDUSTRY USES AGRICULTURAL PRODUCTS

Farm chemurgy, the application of agricultural products to industrial uses, is in its infancy, but it already takes in a lot of territory. The chemical industry uses more than $1 billion worth of agricultural products a year to make a variety of chemicals.

Agricultural Raw Material			Used in Manufacture of
CARBOHYDRATES	Vegetable	cellulose	— nitrocellulose, rayon, lacquers,
		cotton linters	cellophane, acetate, paper
		wood pulp	
		starch (corn)	— adhesives, dextrose, sorbitol
		corn steepwater	— penicillin
		oat hulls, corn cobs	— furfural, nylon, medicinals
		sugars and molasses	— allyl sucrose, alcohol, acetone
		lignin	— vanillin, leather and textile chemicals
		rosin	— soaps, paints, plastics, paper chemicals
	Animal	lactose (milk sugar)	— pharmaceuticals
		lactic acid	— food, pharmaceuticals
FATS AND OILS	Vegetable	cottonseed oil	— oleomargarine, shortening
		soybean oil	— paints, shortening, lecithin, oleomargarine
		tung oil	— paints, varnish
		peanut oil	— pharmaceuticals
		linseed (flax) oil	— paints, printing
		waxy maize	— pharmaceuticals
		castor oil	— pharmaceuticals, paints
		tall oil	— paints, soap
	Animal	inedible tallow and greases	— soap, glycerin, stearic acid, red oil, lubricants
PROTEIN	Vegetable	zein	— synthetic fiber, printing inks
		sugar beet pulp	— monosodium glutamate
		wheat gluten	— monosodium glutamate
	Animal	milk	— casein plastics, paints
OTHER	Vegetable	buckwheat	— pharmaceuticals
		alfalfa	— chloresium for wound healing, odor reduction
		tobacco	— insecticides
		turpentine	— paints, plastics
	Animal	animal organs	— ACTH, cortisone, pepsin, extracts, insulin

THE CHEMICAL INDUSTRY AS A PURCHASER

BUYS FROM ITSELF AND MANY OTHER INDUSTRIES

The chemical industry requires products of other industries in large quantities for raw materials and processing operations. Part of the industry is integrated, using its own raw materials, and carrying them to finished production. By far the largest proportion, however, buys its starting materials—primary chemicals or intermediates—from other manufacturers. The fact that the chemical industry is its own best customer is shown in the following table of some major chemical industry purchases:

CHEMICAL INDUSTRY PURCHASES 1947

	Amount (millions of dollars)
Chemicals	$2,655
Agriculture and fisheries	1,211
Food and kindred products	685
Paper and allied products	331
Products of petroleum and coal	325
Railroad transportation	287
Stone, clay, glass products	258
Non-ferrous metals	189
Coal, gas and electric power*	188
Other fabricated metal products	130
Lumber and wood products	45
Apparel	30
Printing and publishing	16
Textile mill products	13
Professional and scientific equipment	13
Iron and steel	5
Electrical machinery	1
Transportation equipment	1
Rubber products	1
Other machinery	1

* According to the Defense Electric Power Administration the chemical industry in 1951 and 1955 will lead all industry in the amount of power used. The greatly expanded capacity for chlorine, phosphorus, magnesium, hydrogen peroxide and many other chemicals produced by electricity for military and civilian requirements accounts for the big gain in power consumption.

Source: United States Department of Labor, Bureau of Labor Statistics, Division of Interindustry Economics, October 1951, "Interindustry Flow of Goods and Services by Industry of Origin and Destination, 1947."

Chemical Expansion Requires Metals

Projected expansion of facilities for petrochemicals between 1950 and 1955 will require:

784,000 tons. of steel	45,200 tons of ferro-alloys
24,600 tons of cast iron	9,440 tons of non-ferrous metals

Source: The President's Materials Policy Commission, "Resources for Freedom," Vol. IV, June 1952, p. 212.

Section Two

HOW THE CHEMICAL INDUSTRY OPERATES

Chapter Seven

EMPLOYMENT, WAGES, OPPORTUNITIES

The chemical industry with its compact production force and efficient organization has always carried out its operations with a minimum of handling. By conveying chemicals in liquid and gaseous form, wherever possible, during stages of manufacture, vastly higher productivity is achieved than would be possible with the handling of solids. The careful, precise design of processing equipment and a high degree of automatic control also accounts for the efficient use of manpower. Yet, because of the volume and scope of chemicals and allied products, the industry is a major employer as shown below:

NUMBER OF EMPLOYEES IN MANUFACTURING INDUSTRIES, 1951

Iron and steel and their products, including ordnance	2,028,000
Machinery, except electrical	1,655,000
Food and kindred products	1,550,000
Textile-mill products	1,274,000
Apparel and other finished fabrics products	1,190,000
Electrical machinery	1,020,000
Automobiles and automobile equipment	827,000
Chemicals and allied products	783,000
Transportation equipment, except automobiles	695,000
Lumber and timber basic products	680,000
Stone, clay and glass products	556,000
Paper and allied products	510,000
Nonferrous metals and their products	488,000
Leather and leather products	379,000
Rubber products	270,000
Products of petroleum and coal	243,000

Source: U. S. Department of Commerce, Office of Business Economics, Survey of Current Business, July 1952, p. 22.

NUMBER OF EMPLOYEES IN CHEMICALS AND ALLIED PRODUCTS

(in thousands)

	1947	Jan. 1953 (preliminary)
CHEMICALS AND ALLIED PRODUCTS—TOTAL	692	769
Industrial inorganic chemicals	66.6	85.6
Industrial organic chemicals	205.5	243.1
Drugs and medicines	93.6	110.6
Paints, pigments and fillers	68.3	75.4
Fertilizers	36.7	33.6
Vegetable and animal oils and fats	55.7	55.4
Other chemicals and allied products	165.3	165.7

Source: U. S. Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics, 1950 Edition, p. 15; BLS press releases.

CHEMICALS AND ALLIED PRODUCTS
PRODUCTION WORKERS AND PAYROLL

1939	1944	1949	1950	1951
		(Production workers in thousands)		
277	551	485	496	535
		(Payroll in millions of dollars)		
$354	$1,196	$1,422	$1,554	$1,825

Source: U. S. Department of Labor, as reported in Industrial and Engineering Chemistry, June '52, p. 1194.

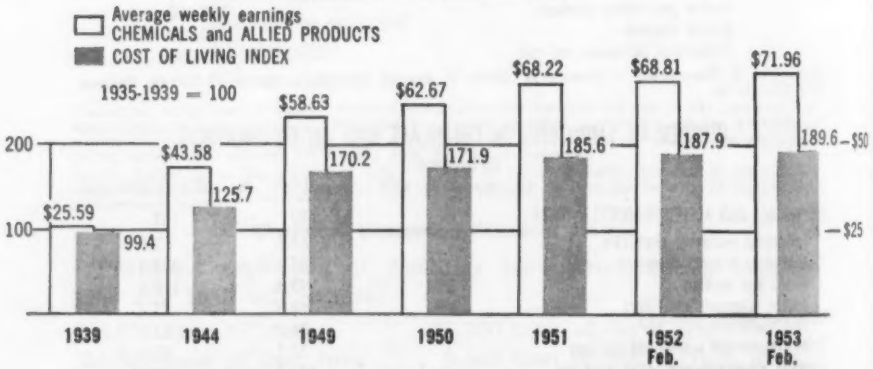
JOBS INCREASE

The introduction of many semi-automatic and continuous processes in the chemical industry has eliminated much heavy and tedious work. As with every other industry, advances in technology have caused some temporary displacement. It has been the experience of the chemical and other industries, however, that making more goods at lower prices creates many more jobs than the onerous work which is eliminated by better equipment.

In 1950, according to the U. S. Department of Commerce, more than 100,000 were employed in synthetic fibers, plastics, and synthetic rubber manufacture, jobs that did not exist a generation before. Chemical and allied product salaries and wages totaled $3,176 million in 1951. Average annual earnings of $4,056 placed chemical employees in the top pay ranks of all manufacturing industries.

It has been estimated that the current expansion of the chemical industry for defense, which will increase capacity by roughly a third when completed in 1955, will add 200,000 employees.

EARNINGS AND COST OF LIVING



Source: U. S. Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics, 1950, pp. 66, 100; BLS press releases; Chemical Facts and Figures, Manufacturing Chemists' Association, 2nd edition 1946, p. 278.

CHEMICAL WAGES AND EMPLOYEE BENEFITS AMONG BEST IN INDUSTRY

	Average Weekly Hours					Average Hourly Earnings				
	1949	1950	1951	Feb. 52	Feb. 53	1949	1950	1951	Feb. 52	Feb. 53
All manufacturing	39.2	40.5	40.7	40.7	41.0	$1.40	$1.47	$1.59	$1.64	$1.74
Chemicals and allied products	41.0	41.5	41.8	41.4	40.7	$1.43	$1.50	$1.63	$1.66	$1.76

	Average Weekly Earnings						
	1939	1944	1949	1950	1951	Feb 52	Feb. 53
All manufacturing	$23.86	$46.08	$54.92	$59.33	$64.88	$66.91	$71.42
Chemicals and allied products	$25.59	$43.58	$58.63	$62.67	$68.22	$68.81	$71.96

Source: U. S. Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics 1947, pp. 54, 76; 1950, p. 66; BLS press releases.

EMPLOYEE BENEFITS

An extensive survey of the industrial chemical industry in October-November 1951 conducted by the U. S. Department of Labor showed all chemical workers studied were covered by formal vacation plans.

Industrial chemical establishments with at least 95% of the industry's total employment financed insurance or pension plans either partially or totally. Life insurance was the most common; health and hospital plans were also prevalent. Employers with about three-fourths of the labor force contributed to pension plans for their workers.

PERCENTAGE OF ESTIMATED WORKING TIME LOST BY STRIKES

	All industry	Chemicals and allied products
1949	.45	.14
1950	.59	.47
1951	.26	.11

Source: U. S. Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics, 1950 Edition, pp. 10, 143, 144.

LABOR TURNOVER

	Separations from all causes per 100 employees		
	Month of Dec. 1949	Month of Dec. 1950	Month of Dec. 1951
Industrial organic chemicals	1.3	1.2	1.1
Industrial inorganic chemicals	1.0	3.0	1.9
Average all manufacturing	3.2	3.6	3.5

Source: U. S. Department of Labor, Handbook of Labor Statistics, 1951, pp. 13, 21.

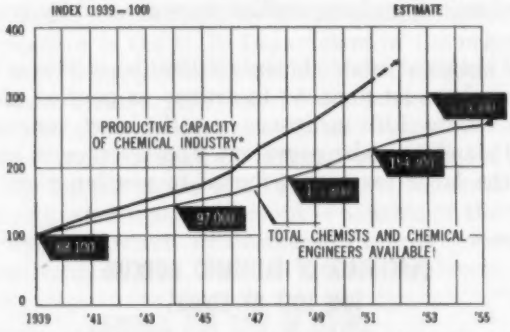
OPPORTUNITIES IN THE CHEMICAL INDUSTRY

Because of the highly technical nature of its operations, the chemical industry employs people with chemical, chemical engineering or other scientific training in many types of jobs, including:

Research	Market Research	Engineering and Construction
Production	General Administration	Personnel
Sa'es	Purchasing	Safety
Technical Service	Patents	Advertising
	Public Relations	Legal

This is why the rapid growth of the industry in recent years has resulted in greatly increased demands for technically trained personnel. But despite the fact that the total available supply of chemists and chemical engineers has been increasing, and that more doctors' degrees are being awarded in chemistry than in any other major field of study, the industry has been hard pressed to get enough new technical graduates to maintain its current rate of expansion. The situation is illustrated by the diagram below:

THE CHEMICAL INDUSTRY: GROWTH VS. MANPOWER



Source: Chemical Engineering, Feb. 1952, p. 161; Lux and Moody, Chemical and Engineering News, Dec. 17 '51, p. 5331.

Chemists and Chemical Engineers Work in Many Fields

According to a study by the American Chemical Society, the present total supply of chemists and chemical engineers is employed as follows:

BY FIELD		BY INDUSTRY		BY TYPE OF WORK	
Manufacturing	70%	Chemicals	35%	Design research & dev.	37%
Utilities, mining construction	3	Paint, paper, resins, rubber, textiles	18	Administration	20
Government	15	Pharm., leather, fuels, fertilizers, explosives	16	Analysis and testing	16
Education	5	Apparatus, machinery, electric	12	Production	10
Other	7	Petroleum	10	Teaching	9
		Other	9	Tech. sales and service	2
				Other	6

Source: Lux and Moody, Chemical and Engineering News, Dec. 17 '51, p. 5330.

Section Two

HOW THE CHEMICAL INDUSTRY OPERATES

Chapter Eight

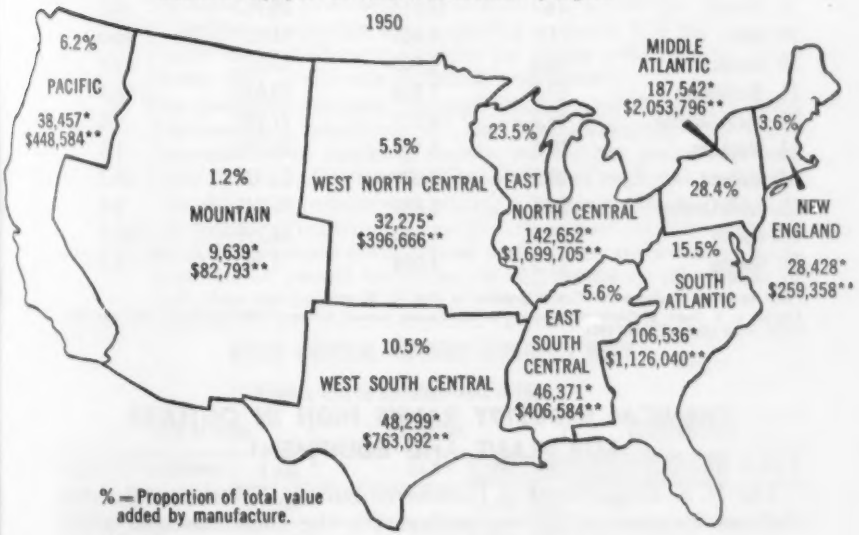
PLANTS AND EQUIPMENT, POLLUTION CONTROL, SAFETY

The 20th century growth of the chemical industry has seen the spread of chemicals and allied products manufacturing to every part of the country. Location of plants has been determined by four factors: 1. Availability of raw materials 2. Proximity to markets 3. Availability of labor 4. Access to low-cost transportation.

In 1950, the Bureau of the Census listed 10,339 establishments providing jobs for 640,199 people. Production of industrial chemicals was five and a half times greater than in 1939.

WHERE THE CHEMICAL INDUSTRY IS LOCATED

Number of Employees and Value of Manufacture by Regions



% — Proportion of total value added by manufacture.

*Employees

**Value added by manufacture in thousands of dollars

Source: U. S. Department of Commerce, Bureau of the Census, Annual Survey of Manufactures: 1949 and 1950. Percentages from Chemical and Engineering News, September 29, 1952 p. 4019.

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HOW THE STATES RANK IN CHEMICAL AND ALLIED PRODUCTS MANUFACTURING

	Value Added by Manufacture, 1950 (millions of dollars)	Number Employees	Salaries and Wages (thousands of dollars)	Current Expansion Covered by Certificates of Necessity* (millions of dollars)
1. New Jersey	$915.5	77,866	$310,668	$ 70.3
2. New York	706.4	67,154	256,078	89.1
3. Illinois	558.6	49,162	182,949	82.4
4. Texas	477.5	28,648	104,928	435.0
5. Pennsylvania	431.8	42,522	157,840	137.1
6. Ohio	416.5	38,909	147,441	120.8
7. Michigan	396.8	32,248	129,262	150.7
8. California	375.9	29,889	119,760	109.6
9. Virginia	369.9	33,710	108,042	69.2
10. West Virginia	283.0	19,452	77,109	69.3
11. Indiana	268.6	17,231	72,211	17.4
12. Tennessee	252.3	29,524	98,749	50.8
13. Louisiana	229.9	13,730	49,095	202.8
14. Maryland	176.3	14,898	48,843	22.6
15. Massachusetts	172.3	19,211	69,257	9.9
16. Delaware	93.6	7,266	25,546	8.4
17. Kentucky	78.6	5,084	19,150	45.9
18. Georgia	74.7	10,615	28,732	14.0
19. Iowa	71.4	4,440	16,829	None
20. Connecticut	68.6	6,903	24,652	19.1
21. Washington	61.2	7,470	23,624	24.4
22. North Carolina	59.7	9,577	27,139	3.6
23. Wisconsin	59.0	5,102	20,318	1.3
24. Alabama	49.5	8,021	23,927	66.7
25. South Carolina	34.7	5,878	15,042	1.0
26. Florida	31.6	5,349	14,259	108.9
27. Oregon	11.5	1,098	3,790	2.3

* Not complete. Includes certificates granted to Oct. 15 '52 only.

Source: U. S. Dept. of Commerce, Bureau of the Census, Annual Survey of Manufactures: 1949 and 1950; MCA press release, Nov. 1952.

CHEMICAL INDUSTRY RANKS HIGH IN OUTLAYS FOR PLANT AND EQUIPMENT

The U. S. Department of Commerce Survey, "Markets after the Defense Expansion," shows outlays for the chemicals and allied products industry of $8,758,000,000 (actual and anticipated) for the years 1945-53 inclusive. Of 17 manufacturing industries surveyed, chemicals are second only to the outlays shown for "petroleum and coal products."

AIR AND WATER POLLUTION CONTROL

Wherever there is a concentration of human activity, waste products from manufacturing operations may create a pollution problem. When the capacity of air and water to assimilate these wastes satisfactorily is overtaxed, all sources contributing to the nuisance must reduce their emission of gaseous and liquid by-products to unobjectionable levels.

The control of water and air pollution is a continually changing problem due to the constant change of industrial processes. Furthermore, because of differences in weather conditions, terrain and the polluting substances, there is no standard formula to solve an individual area's problem. Study of each area's unique situation must precede remedial action. Conscious of their responsibilities as good neighbors, chemical manufacturers are constantly studying conditions in their localities to lessen pollution.

The chemical industry is playing a leading role in the prevention and abatement of air pollution by the following activities:

1. Chemical companies engineer new plants so that waste products will not be objectionable.
2. Chemical companies are spending more than $1 million a year in research to study the nature of air and water pollution and processes for minimizing pollution.
3. Chemical companies are spending at least $10 million annually to install new devices to abate pollution in older plants and to operate existing equipment.
4. The chemical industry, through the Air and Water Pollution Abatement Committees of the Manufacturing Chemists' Association, is working closely with other industries and regulatory officials toward the solution of regional problems.
5. The chemical industry is taking a leading part in exchanging technical information on pollution control. Through the MCA it sponsors conferences and issues informative publications on recent technical developments in all phases of pollution control.

WHERE CHEMICAL INDUSTRY EMPLOYEES WORK

Relative Size of Establishments — 1950

Size of Units (Number of employees)		Employees	Establishments
64.4% of all employees work in plants with less than 1000 workers.	1-249	38.8%	95.5%
	250-499	13.1%	2.3%
	500-999	12.5%	1.1%
	1,000-2,499	16.3%	6%
	2,500+	19.0%	.3%

Source: U. S. Department of Commerce, Bureau of Census, Annual Survey of Manufactures 1950, p. 116.

THE CHEMICAL INDUSTRY HAS A GOOD SAFETY RECORD

1951

FREQUENCY RATE (Disabling injuries per million man-hours)	SEVERITY RATE (in charged days lost per thousand man-hours)
Chemical Industry Ranks 9th Out of 40 Industries	Chemical Industry Ranks 19th Out of 40 Industries
CHEMICALS— 5.48	CHEMICALS— .85
Average All Industries—9.06	Average All Industries—.97

PROGRESS IN CHEMICAL SAFETY, 1947-1951

	1947	1948	1949	1950	1951
Accident Frequency Rate	8.86	7.51	5.72	5.82	5.48
Accident Severity Rate	.92	.90	.60	.76	.85

Source: National Safety Council, "Accident Facts," 1947-1951 Editions.

Accident Prevention Programs Succeed

Employees at work in chemical plants are actually safer than at home. Their freedom from work accidents is largely the result of management's large outlay in money, time and engineering skills to provide safe work places and safe operating methods.

The General Safety Committee of the Manufacturing Chemists' Association continually studies potentially hazardous chemicals and supplies information, including to date 50 "Safety Data Sheets," six "Tank Car Manuals," and other publications used by manufacturers and their customers to insure complete protection to workers.

The industry's safety record as compiled by the MCA reporting service is as follows:

	1947	1948	1949	1950	1951	1952
Number of companies reporting	80	86	86	87	89	87
Total man-hours worked (millions)	480	523	541	575	658	677
Total disabling injuries	3,343	3,334	2,621	2,630	3,179	2,782
Accident frequency rate	6.96	6.37	4.84	4.56	4.83	4.10
Accident severity rate	0.78	1.06	0.65	0.73	0.68	0.73

Rail Transportation Safety

Improved methods for handling and shipping chemicals has resulted in a steady reduction in the number of accidents occuring in rail transportation. From 1,006 instances in 1946, accidents have declined every year, dropping to 407 in 1951, according to the Bureau of Explosives.

Section Two

HOW THE CHEMICAL INDUSTRY OPERATES

Chapter Nine

CHEMICAL RESEARCH AND DEVELOPMENT

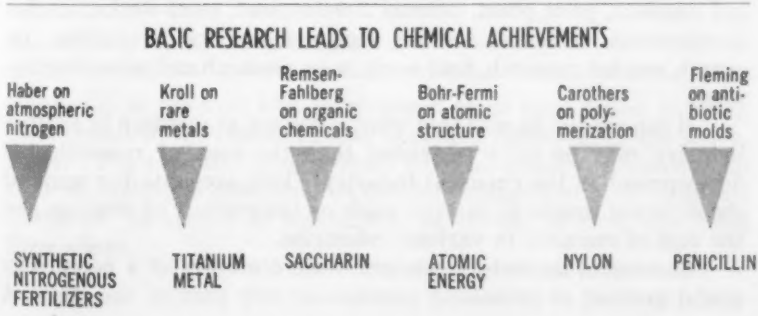
"Industrial research is the only answer to continued progress and the elevation of our living standard."

R. WELLMAN

Research* in the chemical industry is the incubator of new and improved products and processes. Research is important to the public because it means an ever-higher standard of living in three ways: first, it develops new or improved products that do a better job; second, it lowers prices through more efficient production processes; third, it finds new uses for old products. In addition, research stimulates the whole economy by creating new industries and new jobs.

The greatest beneficiary of research in the chemical industry has been the public. To the industry it is life itself, and its end results are intimately linked with every operating division of a chemical company. During the worst year of the depression, the chemical director of an important company told the president of the organization that transfers to other activities had reduced the number of men engaged in fundamental research. The president's comment is typical of enlightened management's attitude toward research: "It is," he said, "more important to do research than it is to pay dividends."

* The word is adapted from the French "recherche," meaning to search into and study closely. In general, research is the application of creative imagination to man's problems.



RESEARCH DEFINED

Research falls into two broad classifications: basic and applied.

Basic or fundamental research—now increasingly emphasized by the chemical industry, the universities and the federal government—has been defined as any planned search for unknown facts and principles of general validity without regard to immediate commercial objectives.

Applied research is any investigation made for a specific practical objective. The book "Successful Commercial Chemical Development," defines applied research as "any planned investigation with the intent of utilizing known phenomena or substances to accomplish a given particular objective." It includes development of new products and processes, and improvement of and finding of new uses for existing products and processes. From applied research come advances in health, security and economic welfare.

In the past 20 years, industrial development has been so accelerated that we have been applying knowledge from the reservoir of basic scientific information without adding new observations on which progress depends. We are now encouraging more basic research at home, and this trend will be more marked in the immediate future. The President's Scientific Research Board in 1947 concluded that the amount spent on basic research by the government, industry and the universities was about $110 million annually, and recommended that this should be quadrupled as rapidly as competent manpower became available.

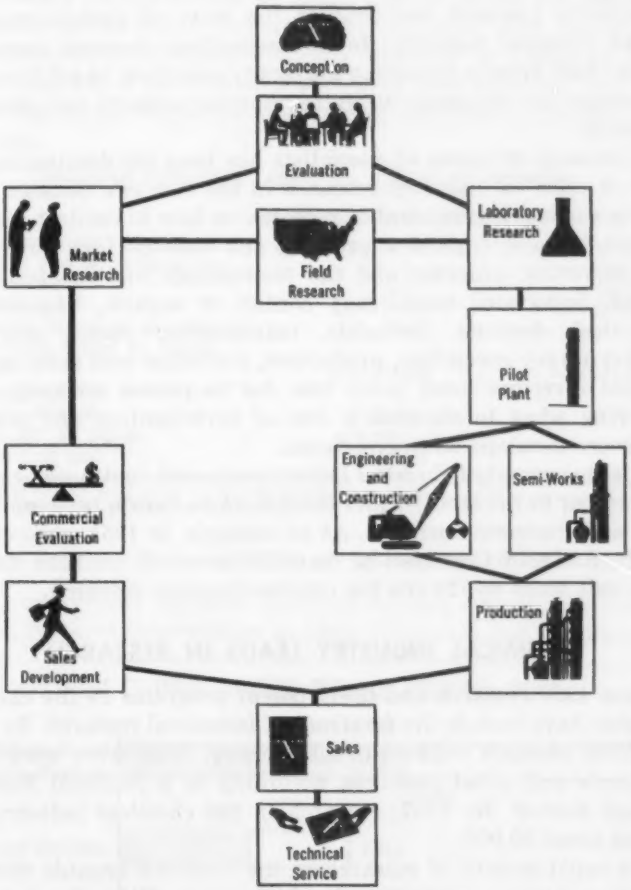
RESEARCH AND DEVELOPMENT

In the chemical industry, research—both basic and applied—and development go hand in hand and include many activities beyond the laboratory workbench. Commercial chemical development of a new product or broadening the fields of use of an established chemical generally includes: applied research, use research, product research, pilot plant, process development, semi-works, market development, technical service, customer service, marketing research, market research, field work, sales research and sales development.

It can readily be seen that what is defined as research in another industry may be more restricted than the area of research and development in the chemical industry. This accounts for some of the differing results of surveys made on the number of workers and the cost of research in various industries.

Successful laboratory research—the discovery of a potentially useful product or promising process—is only part of the story. A

RESEARCH AND DEVELOPMENT OF A TYPICAL CHEMICAL REQUIRES TEAMWORK



Source: Pittsburgh Coke and Chemical Company.

succession of research and development steps must follow to bring the product to the consumer and to return dividends to the shareholder. The evolution of a product from laboratory to commercial scale marketing is dependent on careful management and organized teamwork of scores of specialists, as shown in very simplified form above.

RESEARCH: A TWENTIETH CENTURY DEVELOPMENT

Organized industrial research, as we know it today, did not begin until 1900. Problems that arose in World War I gave a powerful impetus to research and marked the start of sizable programs in the chemical industry. In the beginning, chemical companies sought help from outstanding university scientists to aid in control of production processes; study to improve products and processes followed.

Teamwork of scores of specialists has been the dominating pattern of chemical industry research in the last two decades. Companies conduct a great deal of research on how to conduct research itself—the most fruitful approaches and methods for coordinating and reporting progress and the instruments and equipment required. Integrated teams may consist of organic, physical and analytical chemists, biologists, toxicologists, patent attorneys, market survey specialists, production, statistical and sales experts. Project directors must judge how far to pursue an assignment. Knowing when to abandon a line of investigation and when to persevere develops with experience.

A large amount of chemical industry research continues to be contracted out to universities and there is close liaison between industrial and academic scientists. As an example, in 1951, according to the U. S. Tariff Commission, manufacturers of synthetic organic chemicals spent $6,724,000 for outside-the-plant research.

CHEMICAL INDUSTRY LEADS IN RESEARCH

Since 1920 research and development programs in the chemical industry have been in the forefront of industrial research. By 1927, of 17,000 research workers in all industry, 4,000 were working in chemicals and allied products, according to a National Research Council Survey. By 1937, research in the chemical industry employed about 20,000.

The rapid growth of research in the synthetic organic chemical industry, where comparable statistics are available for a period of 18 years, is shown below. Figures for research in inorganic chemicals are not collected.

GROWTH OF SYNTHETIC ORGANIC CHEMICAL RESEARCH EXPENDITURES

	1933	1938	1943	1948	1951
No. of workers	1,060	1,603	5,086	9,114	9,984
Net cost of research	$6,163,688	$10,449,000	$28,470,000	$95,417,000	$144,784,000

Source: Chemical Facts and Figures, Manufacturing Chemists' Association, Inc., 1950, p. 6; United States Tariff Commission, Synthetic Organic Chemicals, Report No. 175, Second Series, p. 166.

Reporting procedures vary so that it is not possible to establish exactly the number of workers now engaged in chemical industry research. However, preliminary reports of a survey of 1,934 companies made by the Bureau of Labor Statistics and the Research and Development Board, Department of Defense, show that 27,307 were engaged in chemical industry research in January 1952. More than half of the total research personnel reported were employed by three industries — electrical machinery, aircraft and chemicals.

REPORTING COMPANIES—CHEMICALS AND ALLIED PRODUCTS

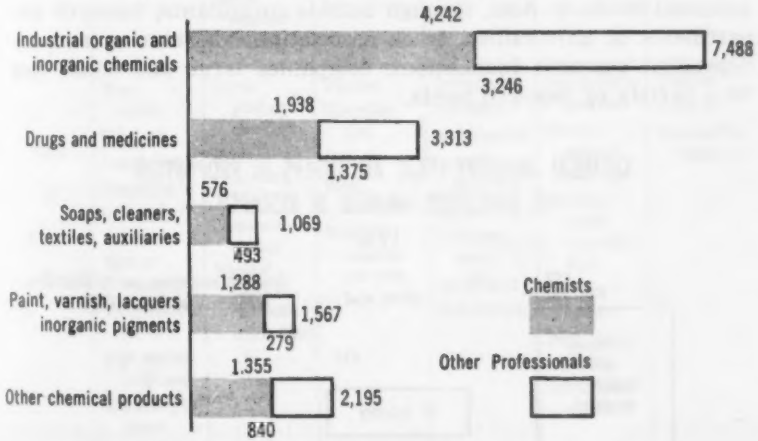
	(an estimated 85% of the industry)	(extrapolated to 100%)
Number research scientists and engineers	13,181	15,507
Total research personnel (including supporting workers)	23,211	27,307
Total cost of research	$204,170,000	$240,200,000
% of research financed by government	7%*	
Cost of research financed by chemical companies	$189,878,000	$223,385,882
Cost per research worker (scientists and supporting personnel)	$7,900	
Cost per scientist and engineer	$16,500	
Research as % of sales	2.5%	

* The report notes chemical companies prefer to finance their own research, and by "assuming much of the cost of research required by the federal government, participate in defense research to a larger extent than the percentage here would indicate."

Chemical Industry Employed 20% of All Research Workers in 1950

The most recent National Research Council survey of 3,313 industrial research laboratories in 1950 (Chemical and Engineering

WHERE CHEMICAL INDUSTRY RESEARCH PERSONNEL WORK



Source: Chemical and Engineering News, Sept. 3, '51, p. 3606.

News, September 3, 1951, p. 3604) showed chemical and allied products leading the industrial field with total research staffs of 32,573 (15,632 professional and 16,941 supporting personnel) out of a total of 165,032 for all industry. This survey covers a wider area than the Research and Development Board report. Charts on this and the preceding page are based on analyses of the 1950 report.

CHEMICAL INDUSTRY RESEARCH GROWTH SINCE 1938

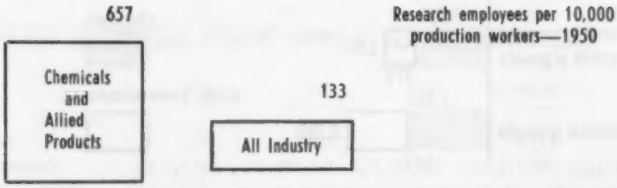
	Chemicals and Allied Products	
	1938	1950
Chemists	4,850	9,399
Engineers	1,094	3,474
Physicists	142	216
Metallurgists	66	109
Other Professions		1,073
Unclassified Professionals	1,870	1,361
Total Professionals	8,002	15,632
Supporting Personnel	1,520	16,941
Total Laboratory Staffs	9,522	32,573

Source: Perazich—Chemical Week, Oct. 27, 1951, p. 22 (based on National Research Council Survey).

Small Companies Also Active

Although the most impressive chemical research programs are maintained by the large companies, small organizations also conduct research from which they receive benefits. Research facilities range all the way from those of a single chemist or chemical engineer to those of one company that has 33 research organizations in nine states, manned by more than 5,000 scientists and nontechnical workers. Also, through outside consultants, research departments of universities, trade association laboratories, and independent research foundations, companies large and small can fill a variety of research needs.

CHEMICAL INDUSTRY LEADS ALL OTHERS IN PROPORTION OF EMPLOYEES ENGAGED IN RESEARCH
1950



Source: Perazich—Chemical Week, Oct. 27, 1951, p. 19 (based on National Research Council Survey).

CHEMICAL RESEARCH INCREASINGLY SERVES BASIC HUMAN NEEDS

	FOOD	CLOTHING	SHELTER	HEALTH	TRANSPORTATION	TOOLS AND MACHINES
1920 to 1930	Synthetic fertilizers Cellophane	Improved rayon Synthetic dyes Moth-proofing chemicals	Titanium pigments Synthetic resin paints	Disinfectants	Pyroxylin lacquers High-boiling anti-freeze Anti-knock fluid Safety glass Alkyd finishes Rubber chemicals	Fluorinated refrigerants
1931 to 1940	Mineral supplements Synthetic flavors Nitrogen fertilizer solutions	Nylon Synthetic tanning agents Water repellents Crease-resistant finishes Flame-retardant finishes	Wood preservatives Resin-adhesives for plywood Fire retardant paints	Sulfa drugs Synthetic detergents Synthetic vitamins	Gasoline antioxidants Plastics Magnesium Oil pour-point depressants	Magnesium Rust preventives
1941 to Present	Weed killers Defoliants Insecticides Fungicides Soil conditioners Mold inhibitors Resin linings for cans High-analysis fertilizers Wet-strength papers	Shrink-proofing chemicals Newer synthetic fibers Permanent "starch" Inherent colors in man-made textile fibers	Silicones Vinyl floor tiles Glass fibers Room deodorants Resin-emulsion and latex base paints	Antimalaria's Antibiotics Antihistamines Synthetic hormones Cortisone Antituberculars Amino acids Radioisotopes	More powerful gasolines Extreme-pressure lubricants Non-flammable hydraulic fluid Synthetic rubbers Plastic car bodies Lubricating oil additives	Titanium Silicones Shell molding plastic dies

Hundreds of new products of chemical industry research are introduced commercially each year.

EXPENSIVE EFFORTS UNDERLIE EACH RESEARCH SUCCESS

♦ Like Ehrlich, who created 605 arsenical combinations before he hit upon syphilis-destroying Salvarsan, modern chemical research undertakes many projects which do not return a profit for each one which leads to a practical application.

♦ Of the 14,000 medicinal chemicals tested for anti-malarial activity, only two have been found satisfactory.

♦ Only four antispasmodic drugs out of hundreds tested and classified are now widely used.

♦ More than 5,000 pain-relieving compounds have been developed, but only eight are commonly used.

♦ Some of the important investigators in antibiotics failed to strike pay dirt. One company spent $2 million over a four-year period without success. Research investments of millions without marketable results are not uncommon.

♦ To develop one of the newest wide-range antibiotics, a team eventually numbering 55 scientists spent two and a half years examining 100,000 soil samples at an approximate cost of $4 million. (Only 76 out of the 100,000 soil samples showed any antibiotic activity at all.)

♦ It has been estimated that $25 million has been spent during the past five years for research in the development of ACTH, cortisone and other pituitary and adrenal hormones. It will be many years before profits equal the research expenditures.

The successes must yield enough to:

1. Recoup the investment in research, development and production.
2. Pay for the many unproductive projects carried on before success occurred.
3. Provide fair return for efforts expended and risks taken.

Unless tax and public policy permits adequate return on the successes, the wherewithal and the incentive to carry on costly research will vanish.

CHEMICAL PATENTS REFLECT GROWING IMPORTANCE OF CHEMICAL RESEARCH

Years inclusive	Total Patents	Chemical Patents	Chemical Patents As % of Total
1907-1909	105,211	3,370	3.2
1910-1914	178,202	10,690	6.0
1915-1919	203,687	10,640	5.2
1920-1924	194,691	13,490	6.9
1925-1929	220,591	22,100	10.0
1930-1934	243,697	37,850	15.5
1935-1939	199,292	39,650	20.0
1940-1944	180,984	36,610	20.2
1945-1948	103,846	20,965	20.2

Source: Chemical and Engineering News, January 21 1952, p. 239.

RESEARCH MAKES FOR GREATER STABILITY OF SALES, EARNINGS

Research is actually insurance against stagnation and obsolescence. It is a down payment on future business. The proved value of research in this connection is demonstrated by the fact that management in the chemical industry has increased research budgets from less than one-half cent per dollar of sales in the early years to about three cents in 1950.

The record of one company, which has consistently spent substantial sums for research, serves as an example:

Boom Years 1925-1929:	Investment in new plant and facilities	$80 million
	Paid in dividends	$70 million
Depression Years 1930-1934:	Investment in new plant and facilities	$70 million
	Paid in dividends	$80 million

A study of 45 companies in the chemical industry shows growth and an increase in earning power and dividends from 1929 through the depression to 1937.

- Thirty-nine of these companies had no deficits in any year.
- Earnings of the whole group in 1937 averaged 28% above 1929.
- Thirty-eight paid cash dividends every year. In 1932, these dividends averaged only two percent less than in 1929, and in 1937, 90% more than in 1929. In spite of these substantial disbursements, capital and surplus increased approximately 26% over this period.

RESEARCH HAS MADE U.S. LESS DEPENDENT ON FOREIGN SUPPLIES OF MANY CHEMICALS

Before World War II, 75% of the world's drug products were produced outside the United States. In 1952, estimates indicate the U.S. exported medicinal chemicals worth $224.8 million; imports were estimated at $6.5 million.

Natural camphor from Japan cost as much as $3.65 a pound in 1919. Research and development of synthetic camphor (chemically identical with the natural product) has lowered the price to about 55 cents a pound today.

Citric acid, once imported from a foreign monopoly at $1 a pound, is made today by domestic fermentation processes and sells for about 25 cents a pound.

Before World War I, 96% of our dyes were imported. In 1951, about three per cent came from outside the United States.

CHEMICAL RESEARCH GETS HIGH PROPORTION OF SALES DOLLAR

	Percentage of Sales Dollar	
	Range	Average
Diversified chemical companies	2.2—4	2.8
Heavy chemicals—chlorine and alkalis manufacturers	1.2—2.1	1.7
Companies making other chemical products	1/4—3.9	2.7
Medicinal and agricultural chemicals manufacturers		4.0

Source: Bohmfalk, "Chemical Investments, 1952," p. 11; Perazich, Chemical Week, Oct. 27, 1951, p. 24.

A survey of 24 chemical companies conducted by the Manufacturing Chemists' Association in 1945 showed chemical research expenditures totalling $10,760,379. This was 2.63% of total sales of $409,862,343. Percentages of research costs to sales ranged from 0.40 to 7.87.

A CASE IN POINT: AGRICULTURAL CHEMICALS

Research has made specialized chemicals for agriculture one of the fastest growing commercial chemical fields. More than 4,300 formulations are given in the 1952 Pesticide Handbook. For 1951-1952, sales value of agricultural chemicals reached $260 million.

Agricultural chemicals are frequently very difficult to synthesize, require long and expensive testing. They include herbicides (weed-killers), insecticides, miticides, fungicides, rodenticides, fumigants, defoliants, plant growth hormones and soil conditioners. These products are becoming more and more necessary for increasing crop production in the United States to supply the growing population.

One of the 40 companies now seeking a share of this market has screened more than 50,000 compounds for possible agricultural use. An authority estimates that companies have examined more than 100,000 compounds in a five-year period. During the last decade 35 new compounds have had sales of upward of 100,000 pounds a year. Fifteen others have built to substantial volume. About one in 2,000 chemicals screened is found suitable.

Based on an informed estimate of research costs of $1 million each for the 50 compounds that were successful, a total of $50 million in the decade, it follows that each of the 40 companies in the field spend an average of $125,000 yearly, or roughly four per cent of sales.

This research money, totalling $5 million a year, is tied up for a period of from five to 10 years; then from two to $10 million must be spent for plant equipment for commercial production.

Source: Wellman, "Agricultural Chemicals," Sept. 1952.

Section Two

HOW THE CHEMICAL INDUSTRY OPERATES

Chapter Ten

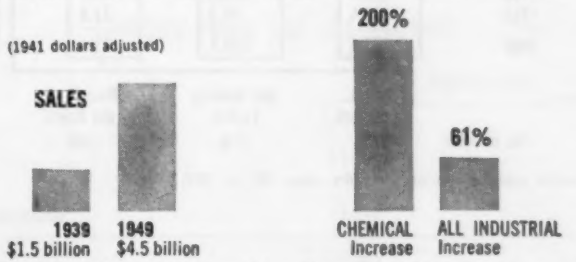
CHEMICAL INDUSTRY FINANCES, PROFITS, TAXES

GROWTH REQUIRES NEW CAPITAL

Rapid growth and the potential high rate of obsolescence has strongly influenced chemical industry finances. The large capital investments for greater productive capacity have made possible the industry's marked expansion in sales.

At the same time new chemical products have borne the full brunt of the excess profits tax, and in many cases depreciation set-asides have been inadequate in view of higher costs for replacement equipment. Many companies have been paying up to 70% of earnings in taxes, so that the biggest traditional source of expansion money—retained earnings—has been declining. Today depreciation allowances fall short of current high replacement costs by $4 or $5 billion dollars a year for the chemical industry.

GROWTH IN A DECADE 1939-1949—45 CHEMICAL COMPANIES



Source: The President's Materials Policy Commission, "Resources for Freedom," Vol. II, p. 104.

In spite of these unfavorable elements, the industry as a whole has continued to move forward. The diversity of its products and the variety of industries that are dependent on chemicals has served to cushion effects of cyclical changes on the chemical industry. Both in the major depression and in the mild recession of 1949, chemicals came through with less distress than other basic industries, and broadened their markets. Many forecasters have confidence in the future growth and stability of the industry as a whole, even though some lines may be affected in periods of low business activity.

WHERE THE CHEMICAL INDUSTRY GETS ITS CAPITAL FUNDS

(Based on 20 Representative Companies)

(Figures in millions of dollars)

	Change in Reserves	Retained Earnings	Depreciation	Debt	Preferred Stock	Common Stock	Total
				NEW FINANCING			
1946	3.2	$ 99.6	$ 88.5	$ 22.2	$ 19.5	$ 6.8	$ 239.8
1947	3.4	124.3	124.7	266.1	137.3	3.2	659.0
1948	6.4	163.3	157.8	40.9	69.7	12.3	450.4
1949	5.0	161.1	188.1	1.6	9.7	30.0	395.5
1950	8.6	228.6	206.8	—13.8	65.4	27.8	523.4
1951	5.1	220.8	231.6	38.8	110.9	52.2	659.4
Total	31.7	997.7	997.5	355.8	412.5	132.3	2,927.5
% of Total	1%	34%	34%	12%	14%	5%	

→ INFLOW

HOW CAPITAL FUNDS ARE USED

OUTFLOW

	Plant & Equipment	Net Working Capital	Miscellaneous Assets	Total
1946	$ 294.4	—$ 65.6	$11.0	$ 239.8
1947	501.1	145.3	12.6	659.0
1948	482.8	—21.7	—10.7	450.4
1949	310.9	75.2	9.4	395.5
1950	336.3	200.8	—13.7	523.4
1951	630.1	16.5	12.8	659.4
Total	2,555.6	350.5	21.4	2,927.5
% of Total	87%	12%	1%	

Source: Industrial and Engineering Chemistry, June 1952, p. 1207.

WHERE NEW CAPITAL CAME FROM IN 1952

Forty chemical companies obtained about $1 billion during 1952 from

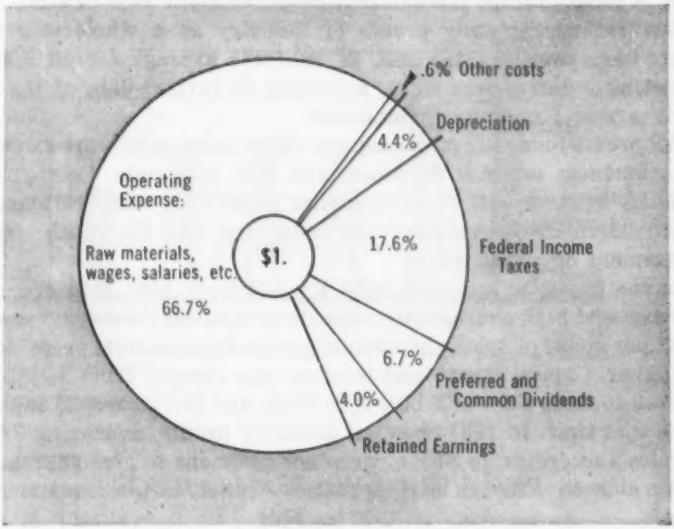
Common stock	$150 million
Public bond sales	$420 million
Institutional investors	$450 million

(Private placement—Insurance companies, private banks)

Source: Chemical Week, Jan. 10, 1953, p. 16.

WHERE CHEMICAL INDUSTRY SALES DOLLAR GOES

Composite for 20 Chemical Companies in 1951



COMPOSITE PROFIT AND LOSS STATEMENT

	Group Composite	
	$ Million	Per Cent
Net Sales	$5,097	
Other Income	147	
Total Income	5,244	100.0
Operating Costs	3,497	66.7
Depreciation	231	4.4
Other Costs	32	0.6
Total Costs	3,760	71.7
Income before Federal Tax	1,484	28.3
Federal Income Tax	925	17.6
Net Income	559	10.7
Preferred and Common Dividends	349	6.7
Retained Earnings	$ 210	4.0

Source: Chemical and Engineering News, May 26, 1952, p. 2183.

PROFITS

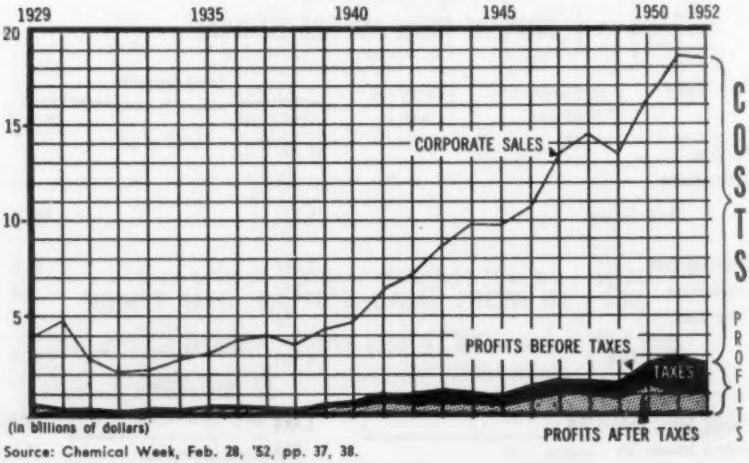
Among many non-business people a misconception that corporation profits run about 25 cents on the sales dollar is rather widely held. A recent survey showed that people thought 10% of sales was a fair return. Actually profits of industry as a whole over the years have averaged far less. In 1951 the average for all manufacturing industry was 4.8%, according to revised data of the Securities and Exchange Commission.

All profits today must be reckoned after taxes, which are as much of a business expense as wages and raw materials. Comparison of today's profits with those of earlier years must take into account depreciation in the value of the dollar and also the much larger investment of recent years.

In the chemical industry, with its relatively high rate of obsolescence and high average investments in modern plants and equipment per dollar of sales, the ratio of profits to sales must necessarily be higher. Capital investment in chemicals jumped from $4 billion in 1939 to more than $8.8 billion in 1948, and has increased rapidly since that time. In 1951 chemical industry profits, averaging 7.2% of sales (according to SEC), were not sufficient to give shareholders an attractive return on their proportionately larger investments.

CORPORATE SALES, PROFITS AND TAXES

Chemicals and Allied Products

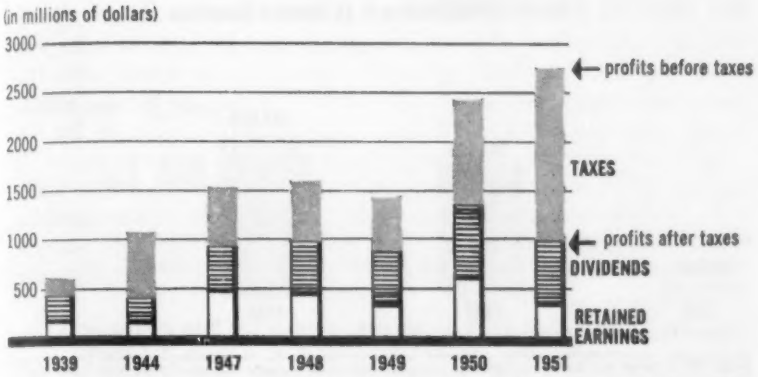


Source: Chemical Week, Feb. 28, '52, pp. 37, 38.

According to the Securities and Exchange Commission between 1945 and 1951, the largest post-war capital expansion—relative to the book value of capital assets in 1945—was in the chemicals, electrical machinery and motor vehicles industries.

PROFITS, TAXES AND DIVIDENDS

Chemicals and Allied Products



Source: 1939-1944 U. S. Department of Commerce. 1947-1951 Federal Trade Commission and Securities and Exchange Commission.

CHEMICAL COMPANIES' SALES AND NET EARNINGS 1951 and 1952

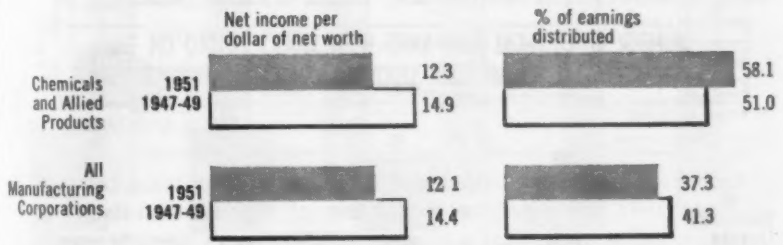
(Based on 23 representative companies)

(thousands of dollars)

TOTAL SALES			NET EARNINGS		
1951		1952	1951		1952
$5,262,240	Up—1.67%	$5,350,222	$551,877	Off—4.1%	$528,932

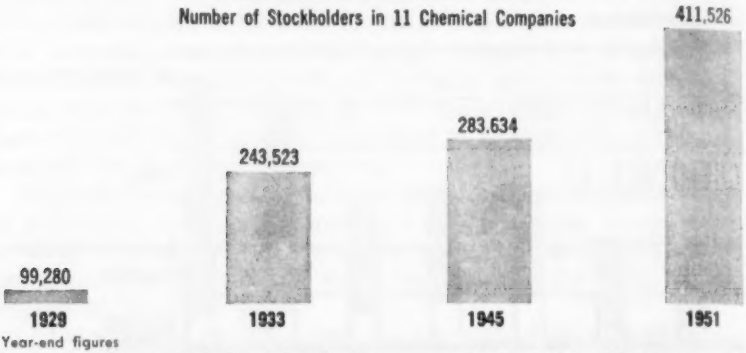
Source: Chemical Week, March 21, 1953, p. 15.

CHEMICAL FINANCES COMPARED WITH ALL MANUFACTURING



Source: Federal Trade Commission, Securities and Exchange Commission.

OWNERSHIP OF CHEMICAL INDUSTRY BY BROAD SEGMENTS OF THE PUBLIC HAS GROWN RAPIDLY SINCE 1929



Year-end figures

In the case of companies issuing preferred and common stocks, shareholders of both are counted twice. No attempt was made to eliminate those holding stock in more than one of the companies represented in the above tabulation.

HEAVY INVESTMENT UNDERWRITES CHEMICAL GROWTH

Three major expansion periods in the chemical industry—during World War II, the post-war expansion, and the defense build-up since Korea—have required billions of dollars of new capital for plants, equipment and operations. With growth continuing at an average rate of 10% a year, as it has for the past 25 years, requirements for new capital will continue to be sizable.

As an example, expansion of petrochemicals between 1950 and 1955 will involve investments of close to $1 billion for the following products:

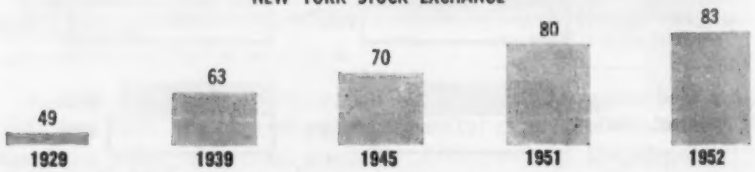
Plastics	$323.7 million
Synthetic rubber	176.1
Automotive chemicals	135.0
Synthetic fibers*	83.6
Protective coatings	48.7
Detergents	14.7
Nitrogen†	12.4
Miscellaneous	148.5
Total	$942.7

* Permanent investment in synthetic fibers was estimated at $769 million in 1950.

† Outside the plant only; total close to $400 million.

Source: The President's Materials Policy Commission, "Resources for Freedom," Volume IV, p. 206.

NUMBER OF CHEMICAL COMPANIES WITH STOCKS TRADED ON THE NEW YORK STOCK EXCHANGE



Source: New York Stock Exchange Reports for years given.

Section Three

CHEMICALS IN EVERYDAY LIFE

Chapter Eleven

CHEMICALS AND HEALTH

For the increase in the life-span since 1900, products of the chemical industry can claim some credit. Health gains may be roughly divided into three areas:

Preventive and curative measures against nutritional deficiency diseases;

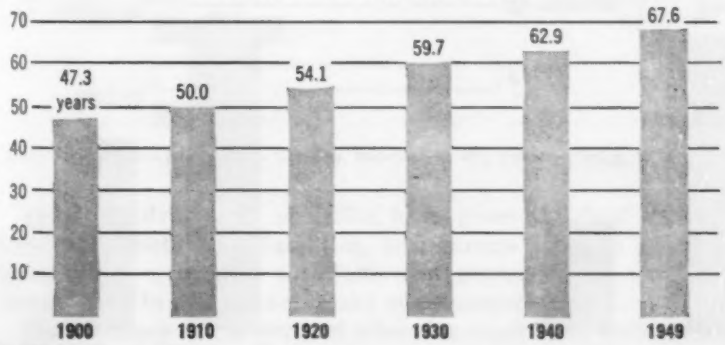
Preventive and curative measures against the infectious diseases;

Preventive and curative measures against the diseases of age and civilization's wear-and-tear, known as the degenerative diseases.

Degenerative diseases are now taking their greatest toll because more people are reaching the middle and late years when these diseases most frequently appear.

Good nutrition and proper sanitation are the chief preventive tools in man's fight against sickness and disease. By contributions to greater production of animal and plant foods, discussed in Chapter 12, the chemical industry is playing a leading role in building the nation's health. Cleansers and disinfectants are among the many well-known chemical aids to sanitation.

EXPECTATION OF LIFE AT BIRTH IN U.S.



Both sexes, all races.
Source: Federal Security Agency, National Office of Vital Statistics, Special Reports, Vol. 33, No. 9, Feb. 16, 1951, and "Average Remaining Lifetime at Specified Ages by Race and Sex: United States, 1949 and 1948."

CHEMICALS AID PUBLIC HEALTH ON BROAD FRONT

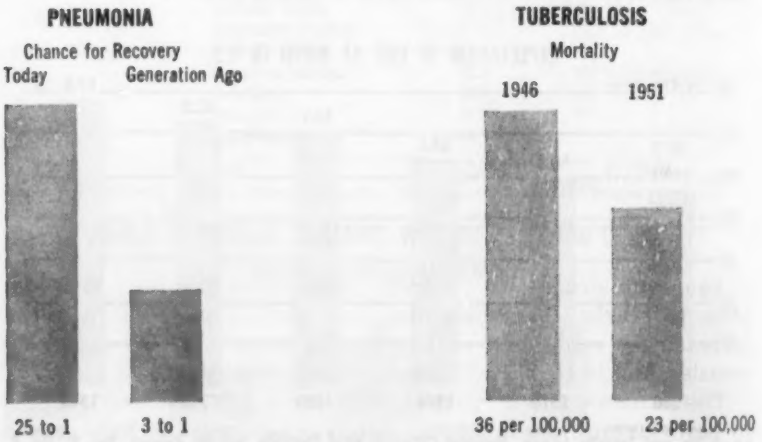
Products of the chemical industry have perhaps made their most recognized contributions to public health in the field of drugs and medicinal chemicals. Since many pharmaceutical houses buy hundreds of finished or intermediate chemicals from a large variety of chemical manufacturers, the end-products are of direct interest to a large segment of the industry.

Speaking of the role of the industry in making new benefits rapidly available to people, an authority has said: "Twenty-five years ago the drug industry and the medical fraternity felt that much was being accomplished if there was one new major discovery in drug research in 25 years. Fifteen years ago the pace had stepped up to one discovery in a decade. Today we have come to expect about one discovery in every six months."

Research and development programs in the industry and prevailing competition has the effect of bringing along new medicinal chemicals for the relief of human ailments and diseases much sooner than they would otherwise in the following fields:

Antibiotics and Chemotherapeutic Drugs
Anticonvulsant Drugs
Antifungal Drugs
Antihistamines
Antispasmodic Drugs
Cancer Treatment Drugs
Diuretics
Heart and Circulatory System Drugs
Hormones
Hypnotics and Sedatives
Pain Relieving Drugs
Plasma Volume Expanders
Sterilizers and Disinfectants
Stimulants
Vaccines, Serums, Blood Fractions

MEDICINAL CHEMICALS HAVE CUT DISEASE TOLL



Source: Burlingham, "Odyssey of Modern Drug Research," 1952; Dublin, Journal of Commerce, Dec. 24, 1952.

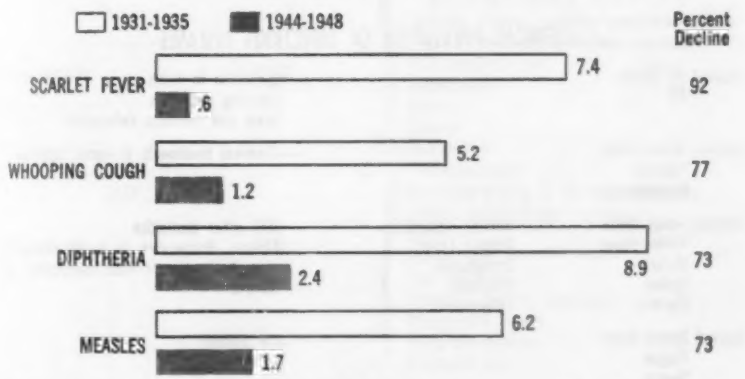
CHEMICALS HELP REDUCE INFANT MORTALITY AND DISEASES OF CHILDHOOD

Success in reducing mortality and sickness in the hazardous first year of life is one of the proudest achievements of public health and medical science. Products of chemical research have played a leading part in helping the medical profession reduce deaths to 32 per 1,000 live births—less than half the rate 20 years ago. This has been accomplished by advances in antisepsis, improved anesthetics, better nutrition of mother and child, reduction of childbed fever, prevention of communicable diseases by vaccines, toxoids, immune sera and antitoxins, and the conquest of infectious diseases by antibiotics.

Great strides have also been made in reducing the toll of communicable childhood diseases through uniform, pure vaccines and serums which are processed by chemical firms. The sulfa drugs and antibiotics have eliminated many of the secondary bacterial infections which were contributing causes of death from these diseases.

PRINCIPAL COMMUNICABLE DISEASES OF CHILDHOOD

Death rates per 100,000



Source: Metropolitan Life Insurance Company, Statistical Bulletin, February 1949, p. 2.

The sulfa drugs and penicillin have given the final knockout blow to scarlet fever fatalities, and gamma globulin has been increasingly recognized as effective in preventing or modifying measles, and in curbing outbreaks of poliomyelitis.

The incidence and severity of whooping cough have been reduced by new vaccines, and antibiotics—notably aureomycin—have proved effective in treatment.

REVOLUTIONARY ADVANCES IN CONTROL OF INFECTIONS

The past 15 years have witnessed extraordinarily rapid advances in the prevention and treatment of infections. A new era in medical practice was inaugurated with the introduction and development of the sulfa drugs, and subsequently of penicillin and other antibiotics. The physician now has at his command potent means not only to cure a wide variety of infectious diseases, but also to shorten very materially the period of disability which they impose.

DEATH RATES PER 100,000 POPULATION FROM SPECIFIED CAUSES

Cause of death	Before new chemotherapy 1935-1937	Reflects influence of sulfa drugs, penicillin and antibiotics 1947-1949	Percent decline 1947-1949 since 1935-1937
Pneumonia—all forms	86.8	33.3	61
Rheumatic fever	1.6	.9	43
Cerebrospinal meningitis	2.0	.6	70
Tonsillitis and pharyngitis	3.5	.4	88
Diseases of the ear and mastoid	3.1	.4	87
Septicemia	.9	.3	66
Diarrhea and enteritis	15.0	6.1	59
Appendicitis	12.5	2.9	76

Source: Reports of the National Office of Vital Statistics.

CHEMICAL PREVENTION OF INFECTIOUS DISEASES

Against Air Borne TB		—Sanitation in home Cleaning chemicals Soaps and synthetic detergents
Against Water Borne Typhoid Dysentery		—Chemical treatments of water supplies
Against Insect Borne Yellow Fever Malaria Typhus Cholera	Amebic dysentery Dengue Fever Encephalitis Filariasis Tuberculosis	—DDT, other pesticides Atabrin, Primaquine to break chain of mosquito-to-human-host transmittal of malaria
Against Rodent Borne Plague Typhus Rat Bite Fever, Rabies		—Rat poisons
Against Milk Borne Tuberculosis Undulant Fever		—Chemical veterinary medicine Chemical disinfectants Cleaning solutions for milking machinery
Against Food Borne Dysentery Botulism		—Chemical sanitation in food plants Chemical preservatives to retard spoilage
Against Soil Borne Hookworm		—Trichlorethylene

VALUE OF ANTIBIOTICS

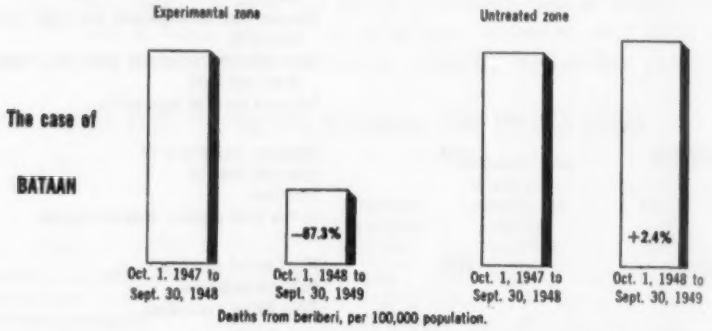
	Date Introduced	Effective Against
Penicillin	1942	Pneumococcal pneumonia Syphilis and gonorrhea Local infections caused by gram-positive bacteria Pneumococcal, meningococcal and streptococcal meningitis Many infections of urinary tract, skin, mouth, throat and teeth Sub-acute bacterial endocarditis
Streptomycin	1944	Meningeal and miliary TB Bone and joint TB Brucellosis Certain gram-negative bacterial diseases
Bacitracin	1945	Mixed wound infections Boils and carbuncles Other topical applications
WIDE-SPECTRUM ANTIBIOTICS:		
Chloramphenicol	1947	Pneumonia, caused by pneumococci, streptococci or staphylococci Bacterial endocarditis, both acute and subacute Meningitis, caused by both gram-negative and gram-positive bacteria Venereal diseases: syphilis, gonorrhea, lymphopathia venereum, granuloma inguinale
Aureomycin	1948	Boils and carbuncles Osteomyelitis Cholera Typhoid Peritonitis Virus pneumonia Infections leading to rheumatic fever Amebic dysentery and abscesses
Terramycin	1950	Erysipelas Scarlet fever Oral infections Influenzal bacillus infections Abscesses of organs Rickettsial diseases Childbirth fever

Note: Antibiotics are not effective against many viral diseases, notably colds, grippes, influenza, poliomyelitis, viral encephalitis, measles, mumps and smallpox.

More than 500 microbiological agents with possible antibiotic properties are being examined. A fantastic amount of work is going into the search. Some of the largest scale and best conceived research programs have failed to discover anything of potential value. During 1952, however, several antibiotics of promise were introduced, and preliminary reports indicate their effectiveness.

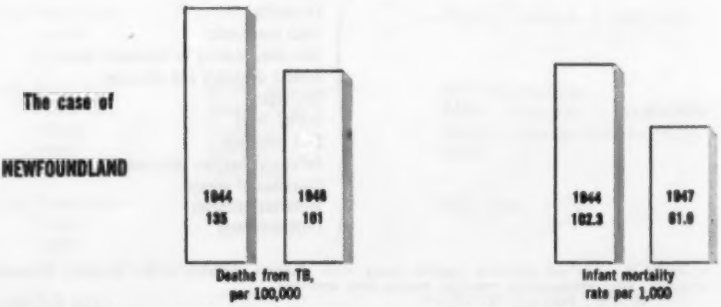
VITAMINS CHANGE HEALTH PICTURE

These charts indicate two noteworthy large-scale controlled experiments illustrating how low-cost man-made vitamins have been enlisted in the fight against nutritional deficiency.


Experimental zone
Untreated zone
The case of
BATAAN
-87.3%
+2.4%
Oct. 1, 1947 to Sept. 30, 1948
Oct. 1, 1948 to Sept. 30, 1949
Oct. 1, 1947 to Sept. 30, 1948
Oct. 1, 1948 to Sept. 30, 1949
Deaths from beriberi, per 100,000 population.

Source: "Better Health Through Better Rice," Williams-Waterman Fund, 1950, p. 24.

Beriberi was formerly a major cause of death in Bataan, where the native Filipinos were accustomed to eating white rice from which nutritional bran had been removed. In 1948 an experiment called for the addition of synthetic vitamins to rice in one region of Bataan. The resultant decline in death rates in that region is clearly apparent in contrast to the untreated zone.



Source: Medical Resurvey in Newfoundland, 1948, p. 11, reprinted from The Canadian Medical Association Journal, 60, April 1949.

In Newfoundland, infant mortality and tuberculosis were contributors to the high death rate. By order of health authorities in 1944 vitamin A was added to margarine, and flour was enriched with iron, calcium and synthetic vitamins. The chart reflects the subsequent change in death rates.

HOSPITALIZATION SHORTENED

The new medicinal chemicals share credit for reducing hospitalization periods. Heads of 2,500 hospitals with 11,945,500 admissions in 1950 reported the average length of stay at 7.8 days, reduced from 10 days average duration of occupancy in 1941 and 1942.

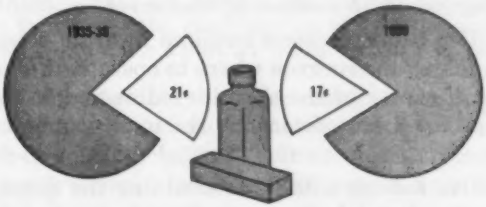
For general surgical operations, average stays over the past five years have been shortened from 14.9 days to 10 days.

Note: The reduction in hospital stay does not fully reflect the benefits of modern drugs, medicinal chemicals and chemical adjuncts to therapy. Thousands more than were admitted a decade ago today are hospitalized, often with long periods of convalescence, because surgery and modern medicine have overcome conditions which would have been fatal a generation ago. Getting the patient on his feet quickly after some types of operations has also significantly reduced length of hospitalization.

Medical Gases

For anesthesia and many types of therapy, the chemical industry supplies the medical profession with a number of gases. Among them are: oxygen, nitrous oxide, helium, helium-oxygen mixtures, ethylene, cyclopropane, carbon dioxide, and oxygen-carbon dioxide mixtures. Trichlorethylene and vinyl ether are also used in anesthesia. Some forms of penicillin treatment require aerosols. Oxygen therapy has increased 700% since 1942. In surgery, resuscitation, and respiratory and cardiac diseases and disorders, products of the chemical industry have thus contributed to saving life and easing pain.

DECREASING PART OF THE MEDICAL DOLLAR SPENT ON DRUGS



Source: American Medical Association leaflet, "Your Money's Worth."

In spite of a tremendous increase in the use of drugs together with the development of new drugs in recent years (cortisone, ACTH, antihistamines, antibiotics), only 17 cents of every dollar spent for medical care in 1950 represents the cost of drugs. In the period between 1935 and 1939, before sulfa drugs were available, 21 cents of every medical dollar was represented by drugs.

HORMONES

A dramatic advance in medicinal chemistry in this generation has been the discovery of cortisone (from the cortex of the adrenal gland) and cortico-tropin (from the pituitary gland) and their use in the treatment of many diseases. These compounds find their greatest application in the treatment of rheumatoid arthritis, rheumatic fever, certain inflammatory eye diseases, bronchial asthma, skin conditions and other diseases. Hydrocortisone, related to and more potent than cortisone, has been found useful in the above, and particularly for injection into joints afflicted with rheumatoid or osteoarthritis, producing local relief without generalized systemic effects.

The benefits of these hormones are incalculable. In this country alone, rheumatoid arthritis and its variants afflict an estimated seven and one-half million people, causing the loss of millions of man-hours of work. Control of these and other diseases relieves the pain and suffering of countless people and enables thousands to resume normal activities.

Cortisone, hydrocortisone and a number of other hormones of value in medicine, are now produced by chemical synthesis.

ATOMIC MEDICINE

Radioisotopes, by-products of the development of atomic energy, promise to overshadow in constructive importance the destructive potential of nuclear weapons. Radioactive substances in small quantities act like tracer bullets. Their course in the body can be followed with detection equipment to aid the physician in disease analysis, diagnosis, and control of treatment.

- Radioactive iodine becomes localized in brain tissue, at points of infection, telling the surgeon where to operate. It is used directly in treatment of cancer of the thyroid. Iodine-tagged human serum albumin helps the doctor determine the total volume of plasma in the body.
- Radioactive sodium aids in determining the cause of obstruction in congested heart failure.
- Tagged penicillin gives a quick index of quantity of penicillin production batches.
- Radioactive gold is used for the treatment of ovarian tumors.
- Radioactive phosphorus is therapeutically active against leukemia.
- Radioactive isotopes of cobalt, cesium, strontium and gallium are being used in experimental therapy.

Section Three

CHEMICALS IN EVERYDAY LIFE

Chapter Twelve

CHEMICALS AND FOOD

Millions of Americans engaged in agriculture are directly assisted and the whole nation enjoys more and better food through the contributions of chemistry to agriculture. The application of chemicals to the problems of crop production has gone hand in hand with mechanization to hold down the cost of food.

What progress has been made?

- Although farm population has declined nine and a half per cent, production is up 45% since 1932. Land under cultivation today is about the same as in 1920, but mechanization has released acreage formerly used to produce food for farm animals.
- Thanks to breeding, genetic improvement and the greater use of chemicals, a farm worker in 1951 produced enough food to feed himself and 14 others. In 1940, a farm worker could supply only nine others. Since World War II, farmers have been spending from five to seven cents of every crop dollar for fertilizers.
- In 15 years, per acre yields of crops have risen 28% and animal yields 13%, according to the U. S. Department of Agriculture. During this period the use of fertilizers has tripled, and the use of agricultural chemicals for controlling plant and animal enemies and conserving food has increased ten-fold. Using one rule of thumb—that the farmer gets back $1 for every 10 cents spent in this way—the combination of savings and additional production now adds about $1 billion a year to farm income.

Other practices contribute to saving consumers even larger sums. Conserving food at every stage from the planted seed to the dinner table through chemical techniques, refrigeration, protection of food in storage, preservation, processing and packaging is an everyday assignment for chemical products.

Foods Improved

At the same time, according to the Food Protection Committee of the National Research Council, there has been continual improvement in the sanitary and nutritional characteristics of our foods. Working with the U. S. Department of Agriculture and the Food and Drug Administration, the chemical industry makes valuable contributions to the quantity, quality and variety of the nation's food.

HOW CHEMICALS WORK IN FOOD CONSERVATION AND ADDED PRODUCTION

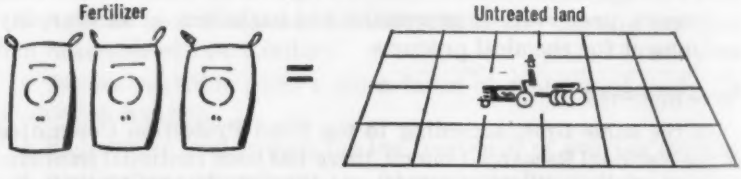
Chemicals serve plants and animals useful to man in three ways:

1. By supplying proper nutrients for growth and development through fertilizers and feed supplements.
2. By helping plants and animals resist hostile factors through farm sanitation and agricultural chemicals which give some protection against disease, insect depredations and competition from weeds.
3. By post-harvest preservation and aids to the packer and preserver, including a number of chemical packaging materials which insure the freshness and sanitary quality of foods the the consumer buys.

Chemical Fertilizers

Chemical fertilizers were one of the earliest, and still rank as one of the most significant contributions of chemical science to man's welfare. It was only little over a hundred years ago that Justus von Liebig set forth the principles on which modern scientific agriculture rests. The discovery that man could greatly increase crop production by supplying three principal chemical elements to the soil—nitrogen, phosphorus and potassium—was dramatically demonstrated in England during the 1870's. The synthesis of nitrates from atmospheric nitrogen relieved agriculture from dependence on natural Chilean nitrates for fertilizer and has been the leading factor in increasing acreage yields. The benefits of fertilizer are so widely realized that they require little discussion. A few examples will suffice to show their importance.

IN EFFECT, FERTILIZER MAKES EXTRA ACRES



EXTRA YIELD FROM 21 MILLION TONS OF FERTILIZER (1950) = YIELD FROM 50 MILLION ACRES OF UNTREATED LAND

Source: U. S. Department of Agriculture, "The Fifth Plate" Leaflet, 1952.

CHEMICALS WHICH HELP THE FARMER AND GARDENER

Vegetable and Fruit Crops
- Fertilizers
- Soil fumigants
- Seed disinfectants
- Weed-killers
- Fungicides
- Insecticides
- Washing and cleaning chemicals
- Fumigants
- Rodenticides

Poultry and Animals
- Chemical feed supplements
  - proteins
  - minerals
  - vitamins
  - antibiotics
- Insecticides
- Cattle and sheep dips
- Veterinary medicinals

Processing and Preservative Chemicals
Packaging Materials

Superphosphate (20%) used in the United States on cover crops, hay and pasture amounted to 120,000 tons in 1936. By using 3 million tons, costing $20 a ton (total cost of $60 million), in 1950 U. S. cattlemen produced 23 million more tons of forage, which fattened 850,000 extra tons of beef, which at $600 a ton represented a total value of $510 million. At least four times more superphosphate than 1950 consumption could be used profitably on farm lands.

The application of nitrogen fertilizers to Bermuda grass has recently been shown to increase protein content from 7 to 11-13%, giving the stock raiser an inexpensive source of traditionally expensive nutrients.

Liquid Fertilizers, Anhydrous Ammonia

Increasing interest is being shown in liquid fertilizers which in many cases offer improved efficiency in feeding crops at lower cost. The biggest requirement of soils that have been farmed for many years is nitrogen. More and more fertilizer manufacturers and mixers are offering liquid formulations for specific requirements of large and small agricultural operations.

Applying anhydrous ammonia directly to the soil at a depth of four to six inches supplies much more concentrated nitrogen than other fertilizers. In experiments, 122 pounds of anhydrous ammonia per acre increased yields of corn from 26 to 107 bushels. Spinach production increased 60% when ammonia was used at the rate of 76 pounds per acre.

Starting with superphosphate, and the development of synthetic nitrogen fertilizers, the chemical industry has gone on to make many contributions to the world's food supply. Some of these are discussed on the following pages.

NON-FERTILIZER CHEMICALS FOR AGRICULTURE: PESTICIDES

Seed Disinfectants and Soil Fumigants

Chemical aids to farming start with seed disinfectants and soil fumigants. Some 500 diseases are known to affect seeds. An initial seed disease like wheat smut may not be noticed until the grain is ripe.

Soil fumigants bring marginal land infested with nematodes, wireworms or other destructive pests back into profitable production. Ethylene dibromide, methyl bromide and chloropropenes (D-D) are used extensively as soil fumigants.

Reducing seedling mortality in plants through disinfectants began with formaldehyde. Later, copper compounds were used, then organic mercury compounds, and today other organics. As little as a teaspoonful will treat a bushel of seeds.

Case History

In one year treatment of seed grains in Kansas saved more than 13 million bushels of wheat, oats, grain sorghum, and barley—worth $28 million.

Pelletized seeds—small balls which incorporate growth stimulants, disinfectants, fungicides and fertilizers in close contact with the seed — may have distinct advantages. In sugar beet growing they cut down on the amount of thinning required; regular unsegmented beet seeds produce multiple plants. Pelletized seeds may help solve the problem of inexpensive mass seeding of burned-over forest lands. For home gardeners, they offer proper spacing and better rate of germination.

Fungicides

More than 50,000 diseases must be kept at bay in the fight to grow man's food and fiber. In spite of the best efforts of science—fungi, bacteria and viruses cause losses estimated as high as $4 billion annually. Sulfur and limesulfur have long been used to control apple scab and certain mildews. Copper salts sprayed or dusted have been valuable against fruit and vegetable diseases. The newer organic chemical compounds—the dithiocarbamates and the chloroquinones—give excellent protection.

Case History

In 1946, an epidemic of tomato blight hit 50% of the crop in 10 states with a loss of $40 million. Prices soared to 10 to 20 times normal. Use of fungicide brought the blight under control by preventing the spread of the disease into uninfected areas. Without it, tomato culture might not have been restored to normal for 10 years.

Insecticides

Seventy-five per cent of the living creatures on this planet are insects. Of more than 700,000 species in U. S., luckily only about 10,000 infect man or his crops, according to "Insects, Yearbook of the Department of Agriculture, 1952."

Without modern pesticides for control of insects and diseases, many of our foods could not be grown commercially while others would be inferior in quality, and scarce and costly because of lower yields. Today more than 40,000 agricultural formulations, based on some 500 different chemicals, have been registered to serve the special needs of the crop raiser. In spite of progress, insect damage to agricultural products amounts to $4 billion annually in the U. S., without counting damage to trees.

Arsenates, and nicotine, rotenone and pyrethrum from plants were the only weapons available until rather recently. Since the introduction of DDT in 1944 (the chemical was first synthesized in 1874), many highly effective synthetic organic insecticides have been developed.

Among the new chemicals which have made notable conquests against the insects which attack man, his animals and his food and fiber crops are:

aldrin
allethrin
BHC (benzene hexachloride)
chlordane
dieldrin
EPN
heptachlor
lindane
malathion
methoxychlor
parathion
TEPP
toxaphene

In addition to producing most of the toxicants which are used in pesticides, the chemical industry supplies the solvents in which they are carried, the surface-active or emulsifying agents which make possible the dispersion of the toxicants throughout the solvents, and the wetting agents which enable the toxicants to cling effectively to the materials treated.

Examples of Insecticides' Value

Malaria and yellow fever, transmitted by mosquitos, have been drastically reduced by insecticides and drainage programs. Food production has risen in many parts of the world where agricultural workers were often disabled by fever.

Louse-borne typhus has been eliminated wherever DDT has been systematically used.

Chemical control of grasshoppers in Montana and Wyoming in 1949 saved both pastureland and crops. The National Research Council says that each dollar invested in control yielded a $55 gain in produce—a direct saving to farmers and consumers.

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In Pennsylvania, sprayed apple trees yielded 11 bushels of fruit compared with only two for untreated trees.

Insect-killing chemicals, on the average, have made cattle 50 pounds heavier, increased milk yields 15-20%. About 50 cents spent for insecticide and applications adds beef worth $15.

In 1949, corn yield in the U.S. was increased 10 million bushels through insecticides. Applications of chemicals—proper fertilizers and control of weeds, fungi and insects—can double yields.

In Wisconsin, $1 invested in pesticides by green pea growers has returned $6 in extra yield.

Weed-Killers (Herbicides)

Perhaps even more costly to the farmer and consumer than disease and insect ravages is the loss of crops caused by the competition from weeds and diseases they harbor. Recently placed at $5 billion a year, the damage done by weeds—added to insect and disease inroads—brings total crop losses to a sizable fraction of the value of total agricultural product. The extent of loss clearly shows the urgent necessity for developing even more efficient agricultural chemicals.

How to reclaim fertile lands from thistles and brush, and to stop hardy weeds from slowing the growth of cultivated crops, are age-old problems against which chemical products have recently scored great successes. 2,4-D, 2,4,5-T, ammonium sulfamate, sodium chlorate, and petroleum distillates are among the materials that give a high degree of control.

Examples of Value of Weed-Killers

A 30% increase in per acre yields of wheat has been reported with chemical herbicides.

Control of sagebrush on four of seven million infested acres which could be cleared in Colorado would result in production of $7 worth of beef, lamb and wool per acre instead of the present $2 worth.

Yields of corn have been increased experimentally from 10 to 40 bushels per acre by the use of weed-killers. The cost of three sprays with 2,4-D is estimated at $2.25 per acre.

Among the vegetable crops which commercial growers have been able to raise at lower costs through weed-killing chemicals are: beets, celery, onions, carrots, parsnips, parsley and asparagus.

Growth Regulators—Plant Hormones

Farmers are finding ingenious new uses for chemicals which regulate plant growth. These chemicals are known as plant hormones or auxins.

Among chemicals finding uses as growth regulators are: naphthalene acetic acid, halo-phenoxy compounds, indolebutyric acid, and maleic hydrazide. These products perform the following functions:

1. **Produce seedless fruit without pollination.**
2. **Help trees, shrubs, and delicate plants to develop root systems quickly.**
3. **Prevent premature shedding of fruit.**
4. **Quickly thin out excess blossoms from overbearing fruit trees.**
5. **Stagger ripening of fruits like pineapples.**
6. **Inhibit grass growth so a lawn needs fewer mowings.**
7. **Inhibit loss of sugar in stored sugar beets.**
8. **Prevent sprouting of potatoes and onions in storage.**
9. **Hasten the ripening of fruit picked green.**

Bin Fumigants and Rodenticides

Hydrocyanic acid, ethylene dichloride and dibromide, methyl bromide and carbon tetrachloride are used for fumigating bins of stored foods. Calcium cyanide is used to treat 10 billion bushels of grain a year.

Six million bushels of stored grains are destroyed by insects and fungi every year. Rats, squirrels and other rodents do enormous damage. Losses may run as high as $600 million a year even with chemical controls.

Strychnine, red squill, thallium sulfate and zinc phosphide have recently been joined by warfarin and sodium fluoroacetate to give the food producer a variety of effective rodenticides. Calcium cyanide is also used as a rodenticide.

MORE FOOD FOR THE FUTURE

In the years ahead, progress is assured. It has been estimated that by 1975 our available acres will have to produce 28% more. An increase of 40 million in U. S. population will mean an extra place at every dinner table where four now sit down.

By the greater use of present fertilizers, pesticides and post-harvest preservation, and new developments which will be coming from the laboratories, these goals can be met. Today insects, weeds, plant and animal diseases cause an estimated $13 billion worth of damage annually, or 42% of the value of the 1950 agricultural crop. This is equivalent to the loss of 17,850 million man-hours of work. An extension of chemical techniques will see these losses steadily reduced.

POULTRY AND LIVESTOCK PRODUCTION BENEFIT FROM CHEMICALS

The use of chemicals has played as dramatic a role in achieving superior health and nutrition in livestock and poultry as it has in man. The chemically-synthesized amino acid, methionine, for example, has increased nutritional value of protein foods for chickens and young turkeys. The addition of a pound of methionine to every ton of turkey and broiler starter mash would save enough feed to produce more than 375 million more pounds of poultry meat each year.

Today animal diets are markedly improved through chemical supplementation at a fraction of the cost of supplying the same materials in high bulk and expensive natural forms.

One of the proudest achievements in which chemical science has played an important part has been the growth of the broiler industry. From a provider of Sunday dinner luxury, it has grown eightfold in 20 years to become an economical standby in everyday meal planning. Disease control and more efficient nutrition have been the big contributions of chemical research.

Egg production has also benefited by the use of inexpensive synthetic vitamins in poultry feed. Between 1940 and 1947, the average annual egg production per bird rose from 134 to 159.

Antibiotics

Used as feed supplements, antibiotics have created a near-revolution in poultry and livestock raising.

A teaspoonful of the wide-range antibiotics in a ton of feed has a three-fold effect.

Calves, Lambs	10% reduction in growing time
Hogs, Chickens	10% reduction in the amount of feed
Turkeys	10% reduction in mortality

Fifty cents worth of antibiotic in hog feed over the animal's lifetime saves $1.25 in feed costs. The universal use of antibiotic-supplemented feed would save $24 million a year in feeding hogs; it would also save $22 million a year in raising chickens.

Typical of the benefits: In Missouri, young pigs on supplemented feed were raised for market with 7% less feed and a 28% greater rate of gain than an identical group on the same ration without the added trace of antibiotic.

A further dividend conferred by antibiotic-supplemented feeds is a reduction in the number of runts or slow-growing pigs. In Iowa alone a million and a half runts are born annually. Antibiotics promise to reduce this number 60 to 75%.

Vitamins

Vitamin B_{12}, a co-product of the fermentation method of making antibiotics, is an active part of the long-sought growth or "animal protein factor" (APF). Its potency is evident in the fact that 200 pounds of B_{12} fortify 15 million tons of feed, its economy in the fact that it would take a billion pounds of meat and fish by-products to supply the same quantity of animal protein factor. Added to a cheap soybean base feed, a minute quantity of B_{12} brings a three-pound broiler to market in nine weeks instead of 11, makes pigs grow 10% faster and 10% heavier.

Other vitamins that are finding use in animal feeds include riboflavin, calcium pantothenate, niacin, choline chloride, vitamin A, vitamin D, betaine hydrochloride, and folic acid.

Minerals

Cobalt sulfate and carbonate, limestone, dicalcium phosphate, potassium nitrate, ferrous sulfate, ferrous carbonate, manganese sulfate and carbonate, and iodized salt, are valuable mineral nutrients used in animal and poultry feed mixtures.

Protein

Urea, made from carbon dioxide and ammonia, is an increasingly important low-cost source of protein. In addition to using it as a plant fertilizer to grow cattle feed, the chemical can be put directly into feed mixtures. Cattle, sheep and other ruminants can use synthetic urea in amounts up to one-third of their total protein requirements in feed mixtures. This development has a double advantage. It enables the farmer to use more of the cheaper carbohydrates, like grain and cellulose, and it extends the use of existing sources of protein in the animal diet.

Veterinary Medicinals

Progress in eliminating and controlling livestock and poultry diseases has paralleled the advances made against human diseases. The antibiotics have been invaluable for fighting such costly diseases as mastitis in dairy cattle, and enteritis in swine. The use of phenothiazine, a chemical curiosity in 1936, has saved many millions annually in raising horses, hogs, cattle, poultry, sheep and goats. Without it, the sheep and goat industry of the West would not now exist. Sodium fluoride is an effective deworming agent for swine. Sulfa drugs are used in great quantities for controlling infections. Coccidiosis, which in 1940 was an unchecked menace, has to a large extent been brought under control by sulfaquinoxaline, sulfamethazine, the arsenicals, nitrofurazone and nitrophenide, together with a better understanding of the cause of the disease.

CHEMICAL PROCESSING AND PRESERVATION

Chemistry has also played a significant role in the technology of food processing and preservation. Minute amounts of chemical products added to foods have improved their flavor, color, texture and nutritional value, lengthened their shelf life and lowered their cost.

Chemical Additives

Flavor accentuators, humectants to retain moisture, emulsifiers to give smooth texture and uniform mix, mold retardants, and antioxidants to delay rancidity have vastly improved the quality of commercially processed foods.

Vitamins and minerals added during processing, in accordance with sound nutritional recommendation, have further contributed to the value received by the housewife when she buys bread and cereals, homogenized milk and fortified margarine.

A FEW EXAMPLES OF HOW CHEMICALS IMPROVE FOOD PRODUCTS

1. **Sodium phosphates are used to prevent curdling of milk during evaporation and to emulsify processed cheese. Calcium and sodium phosphates are used with bicarbonate of soda to leaven cakes, biscuits, doughnuts and pancakes.**
2. **Sodium methoxide, used as a catalyst in lard processing, gives the advantages of a vegetable shortening while retaining the virtues of lard.**
3. **A pinch of mono-sodium glutamate intensifies the distinctive flavors of many foods.**
4. **Calcium and sodium propionates retard molding of the modern loaf of bread for about a week.**
5. **The growing use of homogenized milk with added man-made Vitamin D has protected millions of children against rickets.**
6. **Oleomargarine, an inexpensive and valuable source of nutrients, is distinctly a product of chemical and food industry teamwork.**
7. **The enrichment of bread and cereal products with vitamins and minerals has been termed one of the most significant contributions to health.**
8. **Ascorbic acid added to sliced frozen fruits enriches vitamin content and inhibits browning.**
9. **Lecithin, a chemical obtained largely from soybeans, is finding dozens of uses in food processing. For example, it prevents rancidity in semi-perishable foods, keeps cheese from crumbling during ripening, and stabilizes Vitamins A and D in high-temperature baking.**
10. **Citric acid, a food industry standby, is finding such varied uses as treating teas to improve flavors, preserving fish, giving uniform coloring in vegetable foods, and imparting desirable characteristics to carbonated beverages, jams, pastries and dessert powders.**

In addition, sanitary chemicals are essential to the maintenance of food processing plants and equipment. Without them, labor-saving devices like the milking-machine could not be used. Quaternary ammonium compounds have been a boon to dairy cleanliness.

Section Three

CHEMICALS IN EVERYDAY LIFE

Chapter Thirteen

CHEMICALS AND CLOTHING

Some of the most significant contributions of chemical products are invisible. In many cases, small amounts of chemicals achieve their intended purpose in production and processing and do not appear in the finished consumer product in an obvious form. This is especially true of textiles and materials used for modern clothing and apparel.

NATURAL FIBERS

Cotton Growing

Chemical aids to cotton production have resulted in important economies for the grower and consumer. With modern fertilizers, chemical weeding and insect control and chemical defoliation (leaf removal) which facilitates machine picking, only 10 hours of labor are required per bale of cotton. Without chemical control and machine harvesting, 155 hours of work would be necessary to obtain each bale of cotton. Farmers estimate chemical weed-killers reduce cotton production costs as much as 10 cents a pound.

Against the boll weevil, which has caused as much as $1 billion damage a year, insecticides are making inroads. In Mississippi, 75% of the 1950 cotton crop was saved by chemical treatment. Texas cotton fields with chemical spray and dust treatments to curb insects yielded 415 pounds of cotton per acre compared with 175 pounds for untreated acres. Widely used in California, defoliants, which aid in the control of pests and speed the work of cotton picking, are being adopted throughout the South. An estimated two million acres were defoliated in 1952, according to the U. S. Department of Agriculture.

Cotton Processing

Cotton, which is largely cellulose, in 1952 accounted for about 70% of all fibers used for clothing and home furnishing. Chemical bleaching and dyeing are important processes. Among the chemical treatments that give cotton extra strength and some resemblance to silk is a sodium hydroxide bath. This treatment results in mercerized cotton, a form that is stronger and has a silk-like lustre. Other chemical treatments and finishes create parchment and organ-

U. S. CIVILIAN PER CAPITA CONSUMPTION OF TEXTILES

(pounds)

	1925	1935	1952
Total	25.4	24.8	33.8
Man-made Fibers	.6	2.1	8.5
Natural			
Cotton	21.8	19.4	22.1
Wool	3.0	3.3	3.2

Approximately 6.3 billion pounds of four major fibers —cotton, wool, rayon, and synthetics—were consumed in 1952.

Source: Textile Economics Bureau, Textile Organon, March 1953, p. 45.

dy effects, give stiffness, crease resistance, softness, weight, flame resistance, mildew resistance and water repellency to cotton.

Ordinary cotton bags, such as those used for shipping grain, have a short life. A chemical treatment, partial acetylation, alters the chemical structure of cotton so that it becomes extremely resistant to heat and rot, lasts 12 times as long.

Wool

Wool production is also assisted by chemicals, including fertilizers to improve grazing areas, dips to control insects, scouring and degreasing agents to clean the fleece. The grease recovered is purified to obtain lanolin, widely used in specialty chemical products.

A considerable number of chemicals are used to give special properties to wool fibers, including flameproofing and shrinkproofing agents, lubricants to facilitate spinning, and chemicals for the chrome dyeing of wool.

MAN-MADE FIBERS

Of all the 20th century industrial developments that have benefited the consumer, man-made textile fibers rank high. The first man-made product resulted from attempts to duplicate the product of the silkworm. The man-made fiber manufacturer no longer tries to make a silk substitute, or a cotton substitute, or a wool substitute. The industry seeks to supply textile needs—and primarily with fibers created specifically to serve those needs. The consumer, in turn, is freed from the compromises so often necessary in adapting natural fibers to his requirements.

The new chemical fibers have helped to make Americans today the best dressed people in the world, having longer-lasting, more attractive apparel in greater quantity than the people of any other nation. Yet the proportion of the average consumer dollar spent for clothing has decreased, making more money available for other necessities and comforts. In 1920, 15.5 cents of the consumer's dollar was spent for clothing, according to the U.S. Bureau of Labor Statistics. With better apparel, in 1950, only 12.8 cents was spent for clothing.

Cellulosics

First in volume among the synthetics are the cellulosics, made from the chemically digested cellulose of wood pulp or cotton linters.

The principal types of cellulosics—rayon (viscose process), cuprammonium rayon, and acetate—are used alone and in blends with other fibers to the extent of about 7 pounds each year per person for garments, garment linings, curtains, drapes, upholstery fabrics, blankets and dozens of other articles. Recently rayon has been successfully blended with wool in rug manufacture.

Introduced on a large scale in the '20's, at once the lower price of cellulosic fibers gave them an advantage over silk. Continual improvement in properties has greatly extended their uses.

The cellulosics have many significant advantages such as good dyeability, whiteness, strength, and availability in a wide variety of physical forms. Their uniformity means less waste to a mill than is the case with natural fiber. Availability is certain and price stable.

The mutually complementary nature of the cellulosic yarns is indicated by the fact that in combining the various types with each other, or with other chemical or natural fibers, the outstanding properties of each type of fiber are brought together to give the best value for the particular end-use. The cellulosics have a distinctive feeling of comfort or "hand" which cellulose imparts to fabrics or plastics.

Non-Cellulosics

The first truly synthetic chemical fiber, nylon, which can be made from such basic raw materials as coal, petroleum and certain agricultural by-products, was introduced for women's hosiery shortly before World War II. Within two years it was put under allocation for parachutes and other vital military uses because of its strength, elasticity, durability, and resistance to moths and mildew. It has found so many consumer and industrial outlets since 1945 that it has become almost a necessity today. Other synthetics with highly desirable properties now share the limelight and are being produced in ever-increasing quantities.

Easy washability and minimum ironing are characteristics of acetate, the newer synthetic fibers and many of the blends in which they are employed. Other advantages of the synthetics:

1. They give the textile designer new properties for blending, broaden the range of choice for the consumer.
2. Fiber costs and availability are more predictable because raw materials are not as subject to the vagaries of weather, pests, political and economic conditions.
3. They offer a superior combination of properties for many uses. Since 1946 full-fashioned and seamless women's hosiery has been almost exclusively nylon, because of its serviceability, beauty, washability and overall economy.

A characteristic of some synthetics is durability. For example, nylon heel and toe reinforcement makes socks last twice as long.

Fibers also have many industrial uses which serve the consumer in less visible ways than clothes and apparel. Tires and conveyor belts are two instances where the use of high-tenacity heat-resistant synthetic fibers has greatly extended useful life and so reduced costs.

DYES AND OTHER APPLICATIONS OF CHEMICALS

Inexpensive, attractive and color-fast dyes have been continually improved by chemical research to give satisfactory service for hundreds of specially blended fabrics. Working with the textile designer, printer and colorist, the chemical industry has developed and perfected spinning, weaving and dyeing processes to help textile manufacturers provide fabrics with qualities the consumer wants. Recently the technology of using organic pigments in the spinning solutions or dopes for acetate and other man-made textile fibers has been developed. This makes color inherent throughout the fibers, rather than just dyeing the surface.

Synthetic resins control shrinkage and impart wrinkle resistance to wool, cotton, rayon and blends. They help fabrics retain their original freshness, contribute better drape, tailoring qualities and water repellency to suitings.

Another chemical increases the strength of woolen and worsted yarns. Another protects, or "sizes," rayon yarns before weaving. Bonded together, the fine filaments become strong enough to resist abrasion and withstand the strains of high-speed looms.

Modern maintenance of wearing apparel through a variety of chemicals used in laundering and dry cleaning has resulted in time and money savings to the consumer.

LEATHERS, PLASTICS, COMPOSITIONS

The production of leather from hides has also benefited by chemicals used at many stages in processing and dressing. In 1948, one third of all cattle hides in the United States were damaged, with the loss of leather running to about $20 million a year. The use of insecticides has made damage today negligible.

In addition, man-made "leathers," plastics, rubbers and compositions with special properties have broadened the range of products and lowered prices of shoes, jackets, gloves, rainwear, protective garments, work clothes and dozens of other articles in everyday use. Greater durability, greater flexibility or rigidity, and resistance to staining, weathering and attack from most chemicals, are some of the characteristics that can be built into synthetic plastic films and sheeting for wearing apparel and accessories, draperies, curtains, wall covering, mattresses and pillows.

Section Three

CHEMICALS IN EVERYDAY LIFE

Chapter Fourteen

CHEMICALS AND OTHER NEEDS

CONSTRUCTION MATERIALS, SHELTER

Lumber

Wood is one of man's oldest building materials and still the most important. The forests that produce it are also key factors in flood prevention and erosion control.

Against pests, which have been causing a billion dollars worth of damage a year to trees, insecticides sprayed by airplane are today protecting millions of acres of hitherto inaccessible woodlands at remarkably low cost.

Almost 30% of our 11 billion board feet of lumber annually is chemically treated to prolong its life. Pentachlorophenol, creosote, and chromated wood preservatives are widely used for termite- and rot-proofing of poles, railroad ties and other non-construction items.

"Synthetic lumbers," resin-bonded ground and shredded waste products of the sawmill, are becoming increasingly important. Plywood and hardboard require plastic resins at the rate of 36 million pounds per year. Treated wood block floors for industrial establishments have been gaining in favor.

Glass

In addition to their use as insulation materials, spun glass or glass fibers combined with polyester resins are coming into use as corrugated shatter-resistant translucent roof sections and decorative panels in industrial, institutional and residential building.

Petroleum and Coal Products

Chemical products from petroleum and coal, such as tar and pitch, have long been used in construction materials for roofing compositions, shingles, and siding. The use of plastic resins and chemical adhesives for bonding have extended the serviceability of these products. Plastic-impregnated tar and building papers are instances of recent improvements. An increase in the production of resins based on styrene, glycerin, glycol and polybasic acids will see larger amounts of these materials going into construction.

Plastics

Plastics in many forms are as important as linoleum and asphalt compositions for floor coverings. Plastic laminates are widely used in kitchen counter tops. Plastic tiles have many advantages.

Plastic piping and plastic interior trim are light-weight, corrosion resistant, and easy to handle. The piping is expected to be used widely in radiant heating.

Plastic and rubber-coated metal piping is finding new industrial and household construction uses. Plastic screening has been used to some extent because it is not corroded by salt air.

TRANSPORTATION

Among the most significant contributions of the chemical industry are the benefits which it has brought to modern transportation.

Automobiles

Perhaps the most striking single example in the transportation field is the automobile industry, whose tremendous progress since the '20s has been so closely linked with progress in chemicals. Automobile manufacture involves fundamental chemical problems —from the numerous natural and synthetic materials going into its initial construction to the oil and gasoline required to propel it. One manufacturer lists 256 chemical products that are used directly or indirectly in the automobile industry.

Construction Materials: Each 1950 car required about five pounds of plastics, three gallons of finishes and thinners, and large quantities of adhesives. One auto manufacturer today is using more than 20 different magnesium parts to effect a weight saving of 15 pounds.

Plastics are used generally for electrical insulation, steering wheels, decorative parts, and in safety glass. Upholstery fabrics made from synthetic fibers are similarly a part of the chemical industry's contribution to the automobile.

Fuels and Lubricants: While billions of pounds of chemical materials are used annually by the automotive industry in construction, fuel is the largest chemical factor of all. It has been estimated that the average car in its lifetime on the road will consume almost 12 times its own weight in fuel. Continuous improvement has been made in motor fuels through chemical research. An important milestone in 1921 was the discovery that the addition of a minute quantity of tetraethyl lead to motor fuel would eliminate the knock in the engine and cause the fuel to burn smoothly. Today this antiknock agent is used in all aviation gasolines and most motor fuels, at the rate of 350 million pounds annually. Almost all modern engine oils and greases are improved with chemical additives.

Another important problem which recently called upon the chemical industry for solution was the development of hydraulic oils for use in automatic transmissions.

Rubber: The rapid large-scale development of synthetic rubber during World War II furnishes still another illustration of the parallel progress of chemicals and transportation. Today synthetic rubber is available to the automobile manufacturer with improved properties such as heat-, cold-, oil- and solvent- resistance, low air diffusion, and improved abrasion-resistant qualities not previously available in natural rubber. Chemical curing in the production of rubber saves automobile manufacturers millions of dollars every year. Tires, tubes, mats, wiper blades, engine mounts, and pedal pads are improved with chemical rubber accelerators and anti-oxidants.

Others: Chemical cleansers and detergents are used by the automobile manufacturer prior to painting, plating or other treatment. Paints, lacquers and various finishes as well as the electroplating which involves use of chromium, nickel, copper, zinc, tin and cadmium are other ways in which chemicals enter into transportation. The storage battery requires in its construction such chemicals as sulfuric acid, lead peroxide, plastics, asphalt, and antimony.

Anti-freeze for radiators is made from methanol, ethylene glycol, or alcohol, usually with chemical corrosion inhibitors.

Road Surfaces: Road surfacing materials are also products of chemical processing plants. Calcium chloride is used by many highway departments to remove ice and snow and to maintain bare pavement for safer winter driving. Ethylenediamine and other additives make it possible to lay asphalt on wet surfaces.

Aircraft

Aircraft builders use a comparable variety of chemicals in the manufacture, maintenance and propulsion of planes.

More and more heat-resistant ceramic coatings are being used in the aircraft industry. Used on low-grade metal alloys, they extend supplies of the more expensive and scarcer high-temperature alloys. Alloys based on titanium are much in demand in jet aircraft production to provide light-weight metal that retains strength at elevated temperatures where conventional aircraft materials fail.

Plastic tools are also a boon to the aircraft builder, because they can be built quicker and at lower cost than metal ones.

Today's long-range bombers use almost 20,000 pounds of chemically processed light-weight magnesium, a 20-fold increase over 1940 models.

The plane's hydraulic system must have a fluid which will function over an extreme temperature range and be non-corrosive and non-flammable. Special chemicals have solved this problem. Acrylonitrile for Buna-type rubbers has led to such improvements as the leak-proof gas tank.

Chemicals add over-all safety to aircraft, through flame-resistant interior upholstery and protective coatings for wings and fuselage.

Airplane fuels are given special properties by a blend of synthetic organic chemicals made from petroleum. The use of these fuels gives 50% more power than was obtained from the best fuels of 10 years ago. Rocket propulsion also requires special chemical fuels.

Railroads

Rail transportation is also a volume user of chemical products. Lighter weight metals and alloys, plastic-jacketed wiring, chemically-improved fuels and lubricating greases, wood-treating chemicals for rail ties and poles, and weed-killers for right-of-way maintenance, are common applications.

COMMUNICATION

In the communications field a single chemical, germanium, has played the key role in the transistor. This device, on which a tremendous amount of research is being done, has replaced the vacuum tube in a number of applications. Still confined to telephone systems and some military equipment, it promises to revolutionize communications. Elemental silicon may also be adapted to transistors.

Chemicals are essential in electronic apparatus, fuses, insulation, motor housings, transformers, dielectrics, resistors and printed circuits.

Recent advances in radar have been made possible through chemicals. Polyethylene plastic has been one of the major materials contributing to radar efficiency. A new research product is the silicon microwave crystal for high frequency transmission.

Synthetic crystals made of ethylene diamine tartrate have satisfactorily replaced scarce natural quartz in telephone transmission circuits for multiple messages over single wires. Synthetic crystals made of ammonium dihydrogen phosphate have also been developed for underwater sound detection systems, fundamental to anti-submarine warfare.

Through chemical treatments, the life of telephone poles has been extended to 35 years, 10 times longer than untreated wood.

Chemicals play an important part in compounding metals for communication equipment communications. The application of neoprene chemical rubber, polyethylene and plasticized vinyl resin

jacketing to wire and cable has been a notable advance of recent years.

Chemicals are essential to the business of communication through the printed word. From the rapid transmission of pictures and illustrated material by wire, to the operations performed by the photo engraver, the matrix maker, the ink supply house and the printer, chemical products are used at every step.

MATERIALS AND APPLIANCES IN OTHER INDUSTRIAL AND CONSUMER SERVICE

New materials and new uses for old materials have featured the coming of age of the chemical industry. The rapid application of chemicals to the needs of everyday life has been one of the distinctive developments of the first half of this century.

Plastics' Manifold Uses

Hundreds of examples could be cited, but two of them, plastics and a subdivision of plastics, the silicones, illustrate the point.

Plastics are generally considered to be similar chemical creations because they share one or more characteristics. Actually their differences are so considerable that their fields of usefulness are virtually unlimited. Many of the ways in which plastics serve are well-known.

Here are a few examples of plastics at work:

- Plastic electric wire insulation with low fire hazard.
- Chemical-resistant fabric plastic coatings for protective hoods and protective industrial clothing.
- Plastic surface coatings for improved chemical and corrosion resistance.
- Plastic binder for rock wool and glass fiber insulation; plastic adhesives for bonding wood, glass and metal.
- Plastic films for improved fire-resistant electrical insulation.
- Plastic interlayer for safety glass.
- Plastic core-binder in sand molds for metal castings.
- Plastic base floor waxes with anti-slip properties.
- Plastic shoe soles with improved resistance to wear and water.
- Plastic compounds for molding electrical parts and fixtures having better fire resistance.
- Improving plastic base materials for gaskets and cable sheathing.
- Safer and more effective greases from polymeric materials.
- Improved industrial grinding wheels are plastic bonded for uniform strength and non-shattering characteristics. Plastic-bonded coated abrasives are water and heat resistant.

♦ Plastic shower curtains, drapes, automobile slip covers, food containers, tableware.

♦ Plastics go into the functional parts of shells, bombs, rockets, radar equipment, assault boats, hand grenades, helmet liners, personal protective equipment, medical kits, propellers, gears, electrical apparatus and hundreds of other items of military equipment.

Plastics and Silicones

What is true about plastics as a class is further exemplified by just one type of plastic material, the silicones. Their unusual properties are finding new uses almost every month.

Property: Resistance to Heat and Cold

Silicones in rubber provide positive gasketing action in high-speed military planes at temperatures ranging from –85° F. to 550° F.

Silicones in oil keep consistency at desirable level in spite of extreme heat and cold.

Silicones in motor insulation prevent breakdowns at high heats.

Silicones in paints enable them to stand up at temperatures as high as 750° F.

Property: Anti-Sticking

Silicones speed production of molded rubber and plastics products by facilitating their release from molds.

Silicones prevent foods from adhering to preparation vessels, bread pans.

Silicone-treated electrical insulators are kept free from contaminating substances.

Property: Unusual Surface Characteristics

Silicones make automobile and furniture polishes easy to apply without streaking, are resistant to water.

Silicones make papers waterproof.

Silicones eliminate foaming in food and beverage compounding.

Property: Chemical Inertness

Fruit juices, mustard, and iodine will not discolor a surface protected with silicone coatings.

♦

Silicone insulation makes traction motors and generators last 10 times longer and keeps them running 24 hours a day in spite of overloads, heat and moisture. Silicone oils and greases remain practically unchanged by tropic heat or arctic cold, make conveyor systems operable without continuous maintenance, offer a potential saving of $45 million a year in the bearings of industrial motors alone and make permanent lubrication a practical reality.

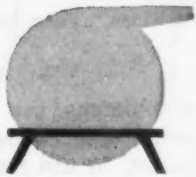
Section Three

CHEMICALS AND EVERYDAY LIFE

Chapter Fifteen

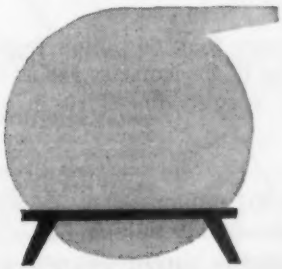
CHEMICALS AND DEFENSE

MAJOR ASSIGNMENTS OF THE CHEMICAL INDUSTRY IN THREE PERIODS OF NATIONAL EMERGENCY



- **WORLD WAR I**

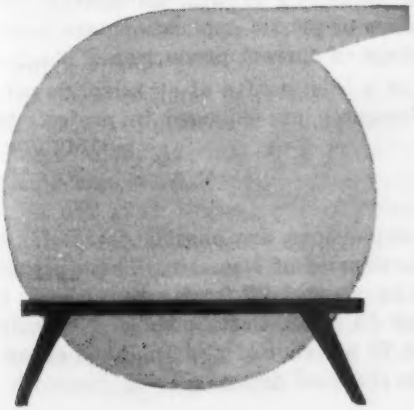
  EXPLOSIVES
  MEDICINALS
  DYES
  CHEMICAL-WARFARE AGENTS



- **WORLD WAR II**

  THE ABOVE PLUS

  SYNTHETIC RUBBER
  AVIATION FUELS
  SULFA DRUGS
  MAGNESIUM
  DETERGENTS
  FERTILIZERS
  NYLON
  DDT
  PENICILLIN
  A-BOMB
  ATABRIN
  PLASTICS
  VACCINES
  ROCKET PROPELLANTS
  NAPALM



- **KOREA AND REARMING THE FREE WORLD**

  ALL OF THE ABOVE PLUS
  WIDE-RANGE ANTIBIOTICS
  NEW SYNTHETIC FIBERS
  NEW PLASTICS
  PLASMA VOLUME EXPANDERS
  TITANIUM
  ATOMIC ENERGY AND THERMONUCLEAR FUSION WEAPONS
  NYLON ARMOR
  JET ENGINE PARTS AND FUELS

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INDUSTRIAL STRENGTH FOR DEFENSE

"One major lesson—indeed, the major lesson—of this war is plain; yet, so far, it has been overlooked in Washington. It should be stated and restated, emphasized and re-emphasized, so that Americans will never forget.

"The war against Germany was won, the war against Japan is being won, because of the superiority of the industry of the United States. The industrial strength of America has been the dominating and decisive factor in this war. . . .

"This comment is far more applicable to World War II than to World War I, *and it will be even more applicable in the future.* If any one element can be said to have decided this war, it was American industry; this writer feels the war would have been lost had that industry failed in the tremendous demands put upon it. . . ."

—Hanson W. Baldwin, "The New York Times," June 11, 1945

The New Defense Expansion

The importance of chemical production to defense can be seen in the expanded materials goals set by the Defense Production Administration. Of the 200 expansion goals set, 57 are for essential chemical materials. In the chemical industry expanded facilities for meeting 41 of these targets in full are in process.

The current expansion totalling more than $6 billion from 1951 through 1955 calls for a 55% increase in the capacity for 32 important chemicals and an increase of roughly one-third in over-all productive capacity.

Estimated expenditures by years:

1951—$1,247 million; 1952—$1,451 million; 1953—$1,571 million; 1954—$1,191 million; 1955—$1,179 million.

During World War II, 85% of plastics output was allocated to military uses. Because of the industry's growth, all military requirements for a greater number of plastic applications are being satisfied out of a small percentage of current production.

It has been estimated that at a least a fifth of all scientific personnel in chemical industry research are engaged in projects to assist defense.

Certificates of Necessity

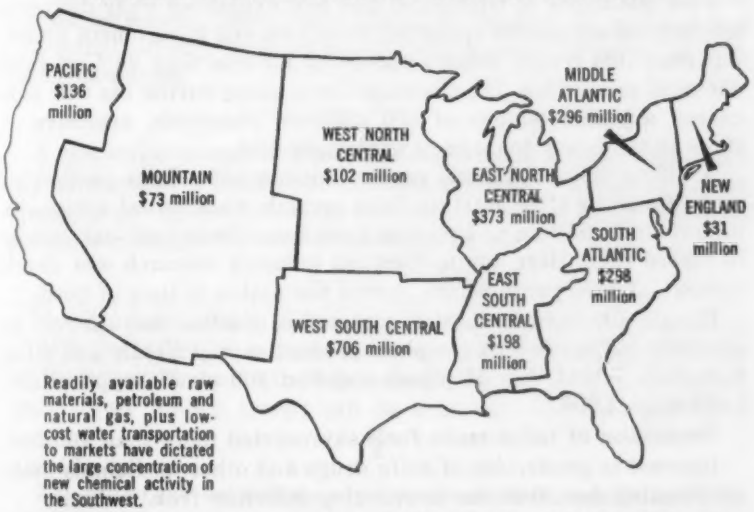
Defense-related industrial expansions are eligible for Defense Production Administration Certificates of Necessity. These permit a portion of the expansion to be charged off for tax purposes in a five-year period. As of October 15, 1952, Certificates of Necessity covering $2,371,582,146, about 70 per cent of their planned expansion costs, had been granted to chemical firms.

CERTIFICATES OF NECESSITY FOR CHEMICALS

Chemical Field	Number Certificates	Amount	% Expansion in place Sept. 30 '52
Industrial inorganic chemicals	235	$815,679,000	32%
Industrial organic chemicals	156	608,962,000	48%
Plastics	79	198,830,000	35%
Compressed and liquefied gases	65	110,319,000	77%
Alkali and chlorine	55	239,989,000	64%
Chemical recovery coke ovens	35	198,344,000	54%
Pharmaceuticals	28	62,892,000	94%

Source: MCA General Bulletin, 713.

WHERE NEW CHEMICAL INDUSTRY EXPANSION IS TAKING PLACE



Note: The above figures represent expansion covered by Certificates of Necessity issued through October 15, 1952. There has also been a substantial additional amount of expansion not covered by certificates. Estimates place the total expansion for the five-year period 1951-1955 at approximately $6 billion.

Atomic Energy Work

Among the many ways in which the chemical industry is assisting the nation in defense is through contracts with the Atomic Energy Commission. At eight AEC installations, chemical companies are using almost 20,000 people for operations in the period between 1950 and 1953. Under contract, more than $1.5 billion will be spent by chemical companies in designing, constructing or operating these government facilities.

Should there be an all-out war, it has been estimated that chemical facilities would have to be vastly increased. Meanwhile, the commanding position of the United States in chemical production is a deterrent to aggression.

THE CHEMICAL INDUSTRY IN WORLD WAR II

Thanks to protective tariffs and intensive research, development, and investment programs during the lean '30s, the chemical industry was in a position to expand rapidly when America became the arsenal of democracy.

Because of the importance of chemicals to the war effort the government invested more than $4 billion in plants and equipment for manufacturing chemicals and allied products between 1941 and 1945. A large number of these plants were put in standby condition in 1945 but have since been returned to production and are now owned or leased by chemical companies.

Vast quantities of traditional and new explosives were delivered by chemical companies operating their own and government plants, but even this record volume accounted for less than 25% of total chemical production. The Chemical Corps alone during the war purchased a billion pounds of 300 different chemicals, exclusive of those in the heavy tonnage or explosives field.

A billion dollar synthetic rubber industry hit volume production just 18 months after starting from scratch, as chemical companies turned out butadiene and styrene from test-tube to tank-car volume in record time. Here again, chemical industry research and development, started years before, served the nation in time of need.

Equally dramatic expansion occurred in plastics manufacture as synthetic materials took the place of short-supply metals and other materials. World War II planes required 200 plastic applications, battleships 1,000.

Production of tailor-made fuels skyrocketed more than 100-fold.

Increase in production of sulfa drugs and other medicinals made outstanding contributions in reducing infection from wounds.

Working with government and universities, the chemical industry expended $25 million on penicillin research and development. The venture paid off and shattered all records for speed of production. By war's end 20 companies were producing enough so that it quickly became available for civilian needs.

Chemical companies helped in the program of processing a half million pints of blood a month for plasma and other components.

In terms of cost, number of scientists involved, and the multitude of chemical and physical problems that had to be solved, the Manhattan project and the $2 billion A-bomb development must rank as the outstanding industrial achievement. Chemical companies played an important part.

Between 1942 and 1945, as high as 25% of the scientific personnel of the chemical industries were working directly on contract assignment from the Office of Scientific Research and Development.

MILITARY MEDICINE

All of the products of chemical research are of course available to the military on highest priority. Many special developments are helping solve health problems of the armed forces. A few examples:

In World War II, Vitamin C knocked out scurvy and Vincent's disease (trench mouth), a disabler in every other war. Sulfaguanidine controlled dysentry which caused more deaths than enemy bullets in all previous wars.

New antibiotics have done much to prevent gas gangrene and wound infections, have made the early closure of wounds and abdominal surgery more successful and speeded recovery of non-battle casualties.

A new iodine compound, called tetraglycine hydroperiodide, used in individual water sterilization tablets for combat troops in Korea, is much more effective than the halazone tablets of World War II in destroying the cysts of amebic dysentery in water.

Streptococcus epidemics now can be stopped by the general use of oral penicillin or sulfadiazine, and controlled studies have recently proved that a 50 to 60% reduction in the incidence of rheumatic fever among troops can be achieved with oral penicillin.

The use of plasma volume expanders—dextran, gelatin and polyvinylpyrrolidone—have proved effective in the treatment of shock due to hemorrhage, burns, trauma and surgery. They can be used in many conditions where blood loss is negligible. Dextran is clinically effective and safe, does not interfere with blood-typing procedures or cross-matching, is stable and ready for immediate use. Mass production now makes plasma volume expanders available for military and civilian use at less than one-third the price of human plasma.

Development of new typhus vaccine which protected American troops in World War II is invaluable in Korea now.

Ion-exchange resins can decontaminate radioactive water both from waste and A-bomb products.

THE CHEMICAL SOLDIER—1953

The armed forces today are better clothed and fed, and have improved equipment and superior medical care because of the chemical industry's products.

A few examples of improvements in equipment:

A new lighter, tougher helmet made of an aluminum shell and a shock-resistant plastic liner is replacing the Army's old steel helmet with its thin plastic liner.

A new type of armored jacket of laminated nylon covered with a waterproof outer shell stops low-velocity shell fragments. Troops in Korea are also getting other nylon armor garments.

An improved field communication wire combines the substantial talking range and other characteristics of standard field wire with the reduced size and easy carrying of assault wire used by fast-moving troops. It is insulated with polyethylene, has a nylon plastic covering.

A revolutionary single-layer, molded-plastic winter combat garment, employing the so-called "vapor-barrier" principle and minimizing the need for drying wet clothing in the field, is being extensively tested for possible use under dry-cold arctic conditions. Previous tests have indicated that the buoyant two-piece garment makes a man unsinkable, even when wearing a 26-pound pack.

A disc-shaped container made of synthetic rubber is now being used for aerial free-fall delivery of gasoline, water or other liquids to troops. No parachute is needed to check its fall.

A new greaseless pack for rifles, machine guns and other small arms, has replaced the heavy grease coatings used in the past.

Plastic piping is being used in Navy minesweepers now under construction. It saves copper and nickel, until now used extensively in shipboard piping.

New chemical formulas used in napalm bombs have produced one of the most effective weapons of the Korean War.

APPENDIX 16

SOUTHWESTERN GRAPHITE CO.,
Burnet, Tex., May 11, 1954.

Subject: Strategic graphite.

Mr. GEORGE B. HOLDERER,
Engineer, Mineral, Materials, and Fuel Economic Subcommittee,
Senate Office Building, Washington, D. C.

DEAR MR. HOLDERER: As a going-concern domestic producer of flake graphite, we feel it advisable to offer our comments relative to the testimony of Mr. Donald R. Irving, beginning on page 260, part 1, of the hearings.

COST OF FOREIGN STRATEGIC GRAPHITE

Mr. Irving, on page 261, develops a figure of "$300 per ton or perhaps a little higher" as an approximate figure for strategic graphite of foreign origin, at dockside, port of entry, freight and all charges paid. It is our opinion that, by the time the importer's commission or margin of profit, plus blending pulverizing, and/or screening costs, plus repackaging cost are added to the $300 figure, the costs of strategic graphite, meeting stockpile specifications and f. o. b. importer's plant, would amount to considerably more than $300 per ton.

COST OF DOMESTIC STRATEGIC GRAPHITE

While we are not in a position to state, without question, the cost of strategic graphite from other domestic deposits, our records will show that the maximum price received by us, for lubricant and packing grade flake graphite, meeting munitions board stockpiling specification P–22–B, was $305 per ton f. o. b. Burnet, Tex., exclusive of the special open-head steel drum not commonly employed in the trade.

For $305 per ton, the national stockpile received from us finished products meeting a large majority of industrial requirements and specifications without further processing. To reach the stringent specifications under P–22–B, it was necessary for us to offer material containing no more than 3.8 percent ash, a product most difficult to produce efficiently in quantity anywhere, regardless of source.

A price of $600 to $1,200 per ton would not be necessary in our case, then, to stimulate production of strategic graphite. Our proven reserves of milling quality flake graphite ore are sufficient to last more than 10 years at full production with indicated reserves extending far beyond this point.

RESEARCH AND DEVELOPMENT WITH PRIVATE CAPITAL

At our facilities, research has been carried on at great expense for many years to a point where we feel that mechanical concentration has presently reached the limits of practical improvement. We will continue to actively pursue all new beneficiation methods or ideas as they appear. But it is our opinion that our methods have progressed far beyond the field in production of high-purity graphites suitable for lubricant and packing applications. These methods may not necessarily do as well in Alabama or Pennsylvania.

We know by virtue of hard experience, and by using a plant under full-scale production for many years as a semipilot mill, that the various flake graphite products of high purity (95–97 percent) required by industry cannot be made available without a long period of intense full production experimentation. True, acid grade fluorspar (97 percent) is produced by conventional methods (flotation, etc.) but the mill heads usually run 30 percent or better. Graphite mill heads exceeding 5 percent are not in the Nation's reserves. Finished graphite concentrates must meet far more exacting requirements than, say for example, the typical metallic concentrates for the smelter.

THE POSITION OF SOUTHWESTERN GRAPHITE CO. AS A DOMESTIC SUPPLIER OF STRATEGIC GRAPHITE

It should be noted that, with the recent permanent closing of the Black Donald Mine in Calabogie, Ontario, Canada, reportedly due to exhaustion of reserves, our operation here in Burnet County, Tex., remains as the only source of strategic

graphite in the Western Hemisphere. Graphite of all types and grades has been flooding into the country from Bavaria, Madagascar, and Ceylon, especially within the past 15 months. Within the past 9 months, consumption of the profitable higher grades has fallen off to a marked extent.

In our lower purity grades, prices are now 30 percent under those of 1942. Graphite on the average has not found the rising scale of value since 1942 that almost all other commodities and wages have enjoyed. We have been fighting our way in a very indifferent buyer's market since our start in 1942.

If conditions entirely beyond our control force us to the wall, the United States, and its industry, will lose the last remaining source of strategic graphite within wartime reach.

May I take this opportunity to thank you and Mr. Sinclair for the very kind reception given me last week and for your interest in the subject of strategic domestic graphite production.

Very truly yours,

ROBERT P. MILLER, Jr.,
Vice President and General Manager.

APPENDIX 17

EXECUTIVE OFFICE OF THE PRESIDENT,
OFFICE OF DEFENSE MOBILIZATION,
Washington 25, D. C., June 14, 1954.

HON. GEORGE W. MALONE,
Interior and Insular Affairs Committee,
United States Senate, Washington 25, D. C.

DEAR SENATOR MALONE: Mr. Victor E. Cooley, the Deputy Director, has told me of the hearing before your subcommittee on May 28, 1954, relative to the Texas City tin-smelter situation. I regret it was impossible for me to be present at this meeting and I want to thank you for your courtesy to Mr. Cooley.

At the meeting you requested that we provide a listing of the offices and agencies which have been merged into the present Office of Defense Mobilization.

The Office of Defense Mobilization was established in the Executive Office of the President by Reorganization Plan 3 of 1953. Transferred to the Director of the Office of Defense Mobilization were:

(*a*) All functions of the Chairman of the National Security Resources Board as authorized by the National Security Act of 1947, as amended, including his functions as a member of the National Security Council;

(*b*) All functions under the Strategic and Critical Stock Piling Act, as amended (60 Stat. 596; 50 U. S. C. 98 et seq), vested in the Secretaries of the Army, Navy, Air Force, and Interior, or in any of them or in any combination of them, including the functions which were vested in the Army and Navy Munitions Board by the item numbered (2) in section 6 (a) of the act (60 Stat. 598), but excluding functions vested in the Secretary of the Interior by section 7 of the act;

(*c*) The functions vested in the Munitions Board by section 4 (h) of the Commodity Credit Corporation Charter Act, as amended (62 Stat. 1071; 15 U. S. C. 714 (b) (h)), and by section 204 (e) of the Federal Property and Administrative Services Act of 1949 (63 Stat. 389; 40 U. S. C. 485 (e)); and

(*d*) All functions vested by any statute in the Director of Defense Mobilization provided for in Executive Order 10193 of December 16, 1950.

Executive Order 10461 of June 17, 1953, provides that the Office of Defense Mobilization and the Director of the Office of Defense Mobilization, provided for in Reorganization Plan 3, are in all respects the successors, respectively, of the Office of Defense Mobilization and the Director of Defense Mobilization provided for in Executive Order 10193, issued under the Defense Production Act of 1950, as amended (64 Stat. 798, 65 Stat. 131; 50 U. S. C. App. 2061–2166). Each reference in any prior Executive order to the Director of Defense Mobilization and/or to the Office of Defense Mobilization was amended to refer to the Director and/or the Office of Defense Mobilization provided for in Reorganization Plan 3 of 1953.

Pursuant to Executive Order 10433 of February 4, 1953, the Director is, ex officia, Administrator of the Economic Stabilization Agency which was established for the purpose of controlling inflation and maintaining the stabilization

of the national economy. (The Office of Defense Mobilization is now liquidating the work of this Agency which went out of existence October 31, 1953.) Executive Order 10433 also transferred to the Director all the responsibilities and functions of the former Defense Production Administration.

Executive Order 10460 of June 16, 1953, transferred to the Director of the Office of Defense Mobilization certain telecommunication functions formerly performed by the Telecommunications Adviser of the President.

The President has also transferred to the Office of Defense Mobilization the Interdepartmental Radio Advisory Committee which deals with the assignment of frequencies to Government radio stations.

You further requested a list of those that comprise the Interdepartmental Materials Advisory Committee. The following Departments and Agencies are represented on this Committee: The Departments of Agriculture, Defense, Commerce, Interior, State, and Labor, the Foreign Operations Administration and the General Services Administration. The Assistant Director for Materials of this Office is the Chairman of the Committee. This Committee was created by ODM to advise ODM on stockpile objectives.

Since ODM took charge of the stockpile program the Department of Defense has concurred in all stockpile objectives established or reestablished by ODM.

I trust that the above information will be of help to you and I assure you of my desire to be of all possible cooperation and assistance.

Sincerely yours,

ARTHUR S. FLEMMING, *Director.*

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